

PERFORMATIVE ARCHITECTURE AS A GUIDE LINE FOR TRANSFORMATION OF THE DEFENCE LINE OF AMSTERDAM

studio tutors: Ir. Huib Plomp, Dr.ir. Bige Tunçer, and
Ir. Sander Mulders



CONTENT

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A defence line

B computing urbanization levels of sites

2 conceptual design of the transformation

3 performative design model

A form finding instance 1

B form finding instance 2

4 building design

5 design development

1 design problem definition

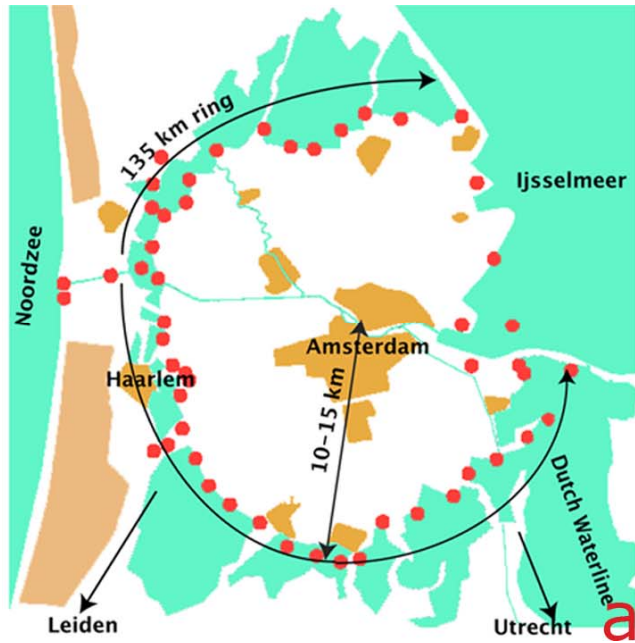
A defence line

configuration of forts

- elements of fort
- photos of forts
- performative design of forts
- defence line -today
- defence line-future

B computing urbanization levels of sites

- input of the parametric model
- effect of strength and area of influence
- assigning strength and area of influence for inputs
- process
- results

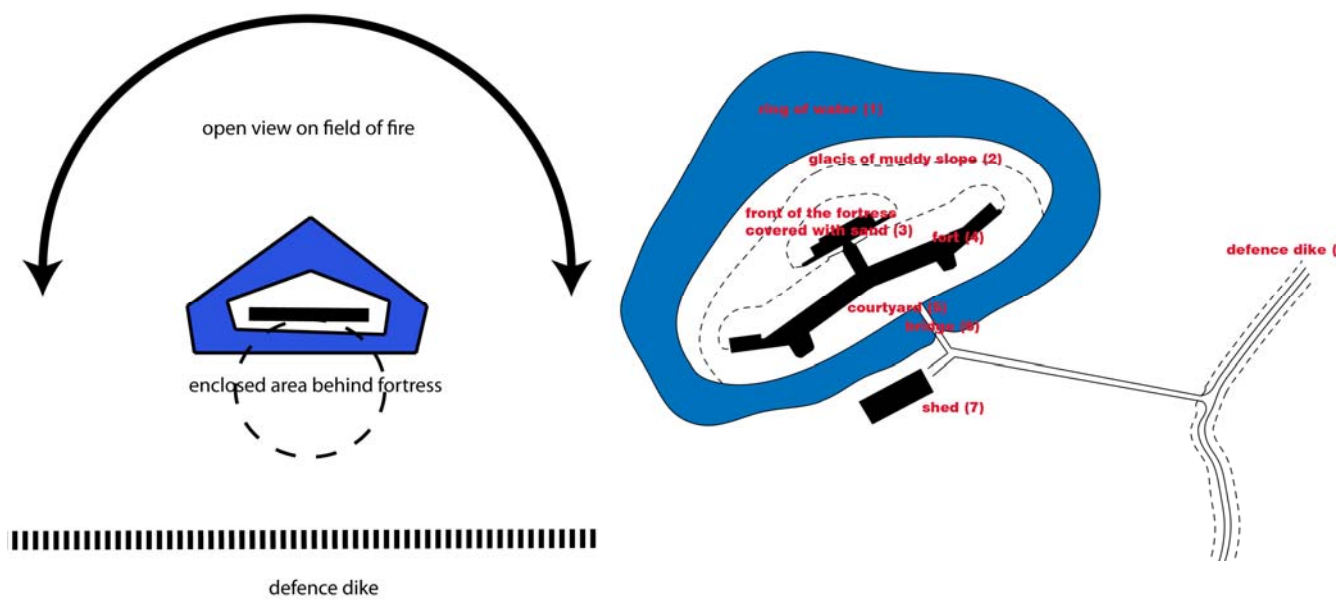


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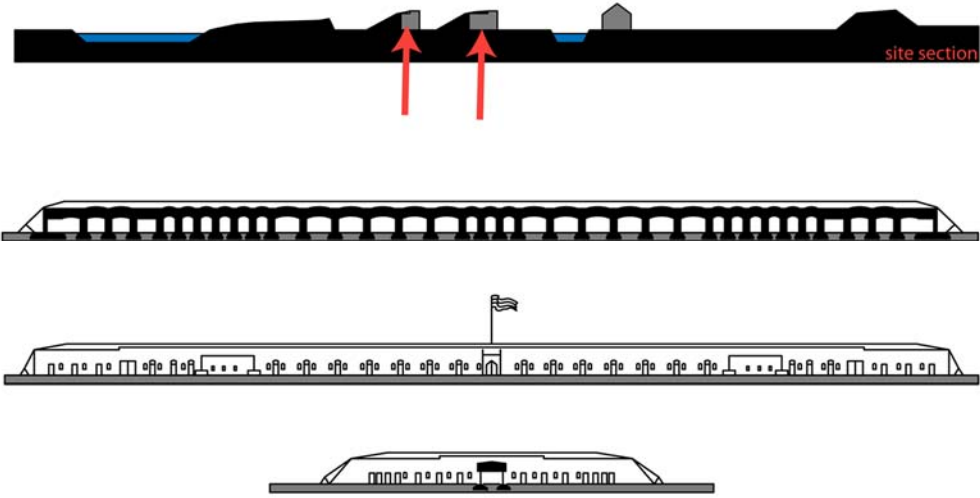


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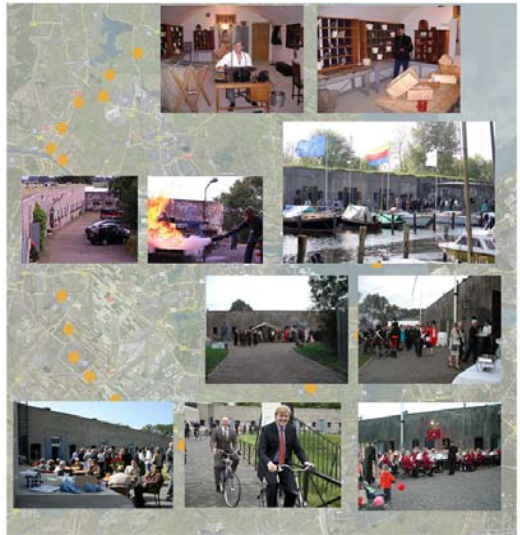
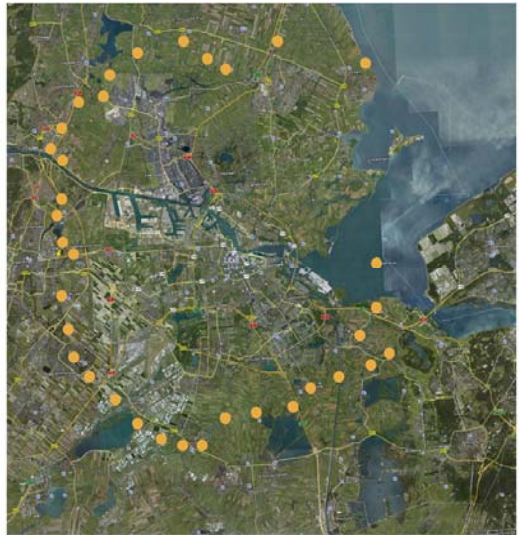


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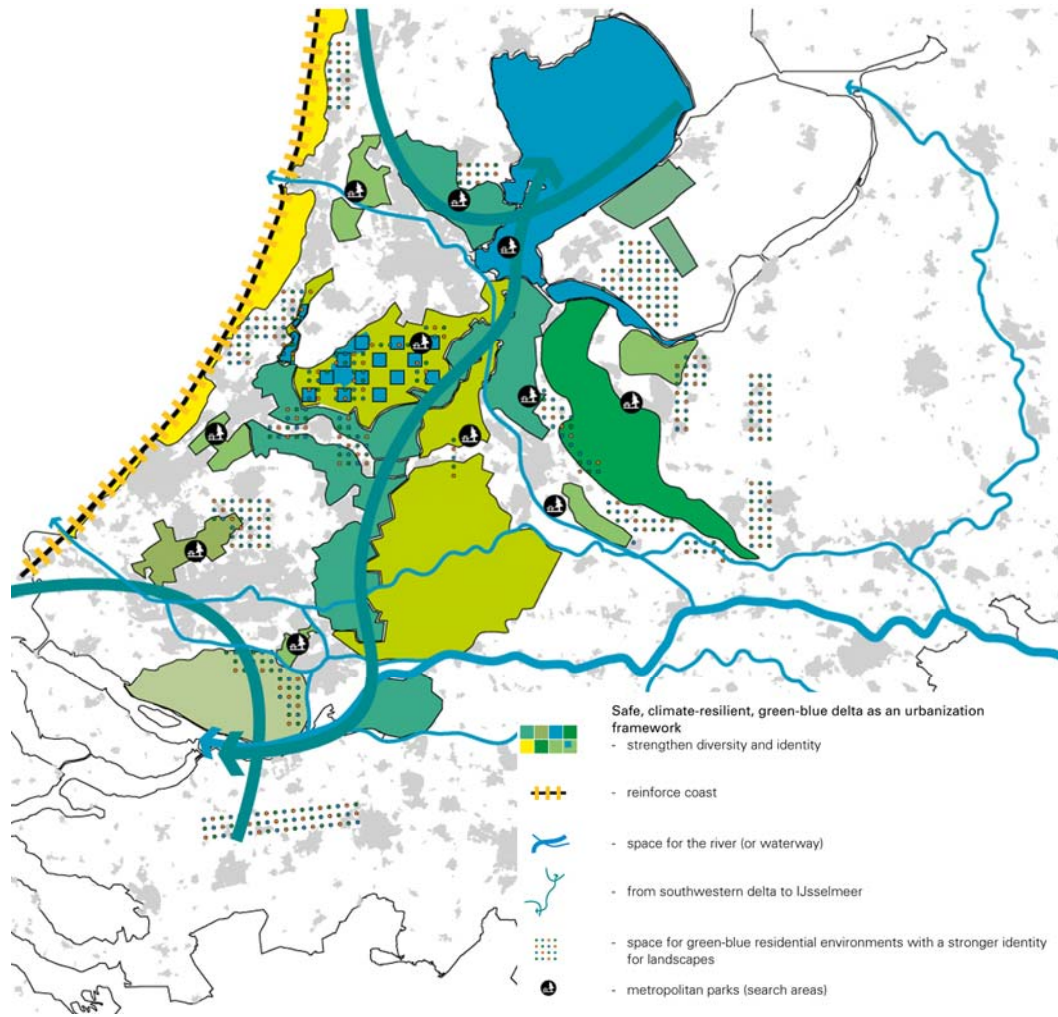


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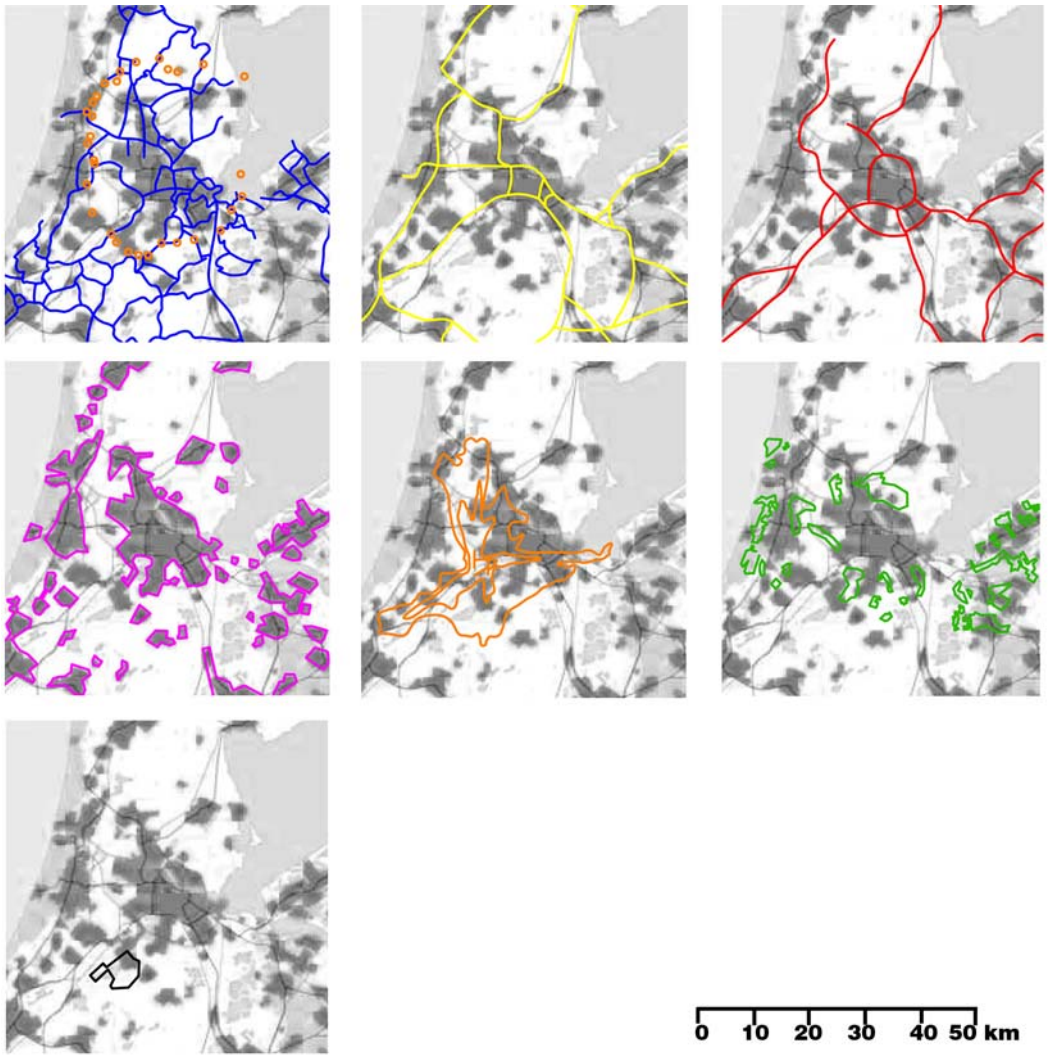


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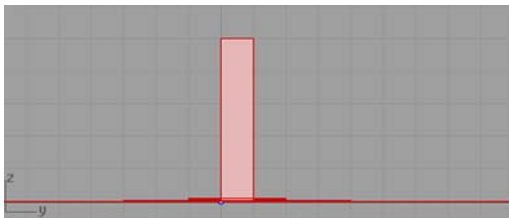


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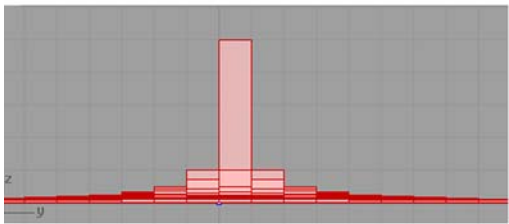
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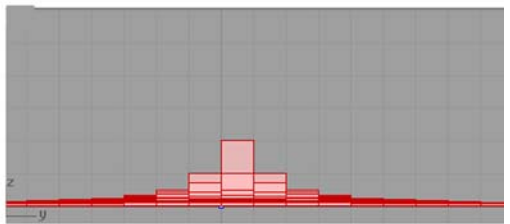
area of influence= 0.1
strenght= 5



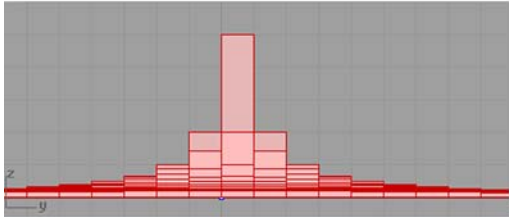
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strenght= 2



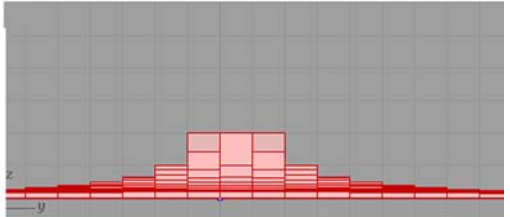
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strenght= 5



area of influence= 1
strenght= 2



area of influence= 2
strenght= 5



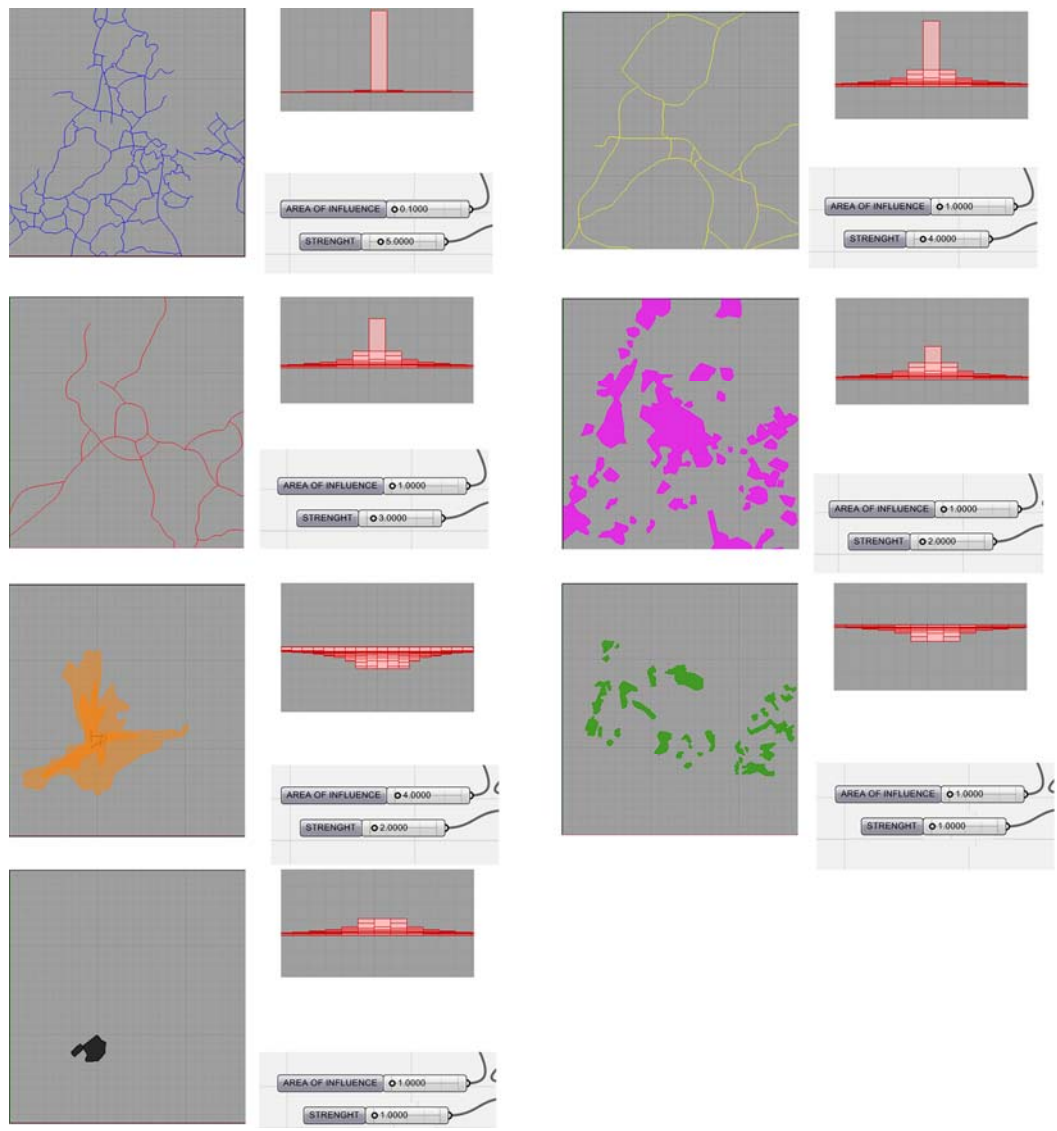
area of influence= 2
strenght= 2

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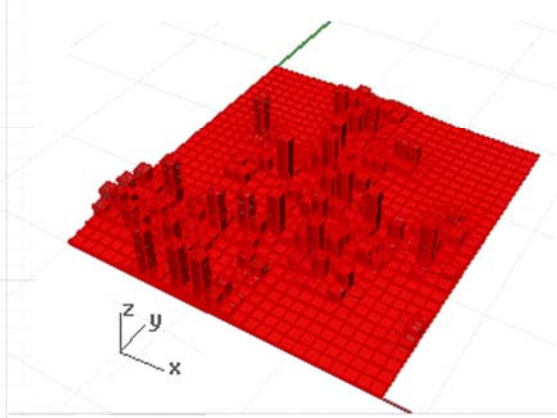
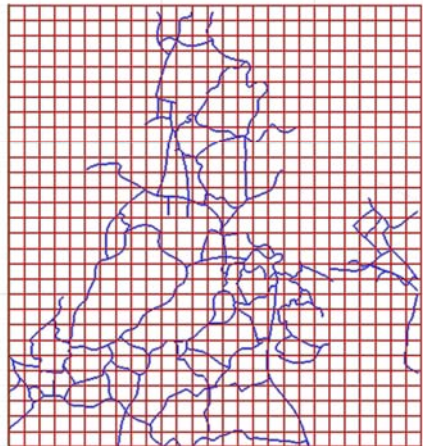
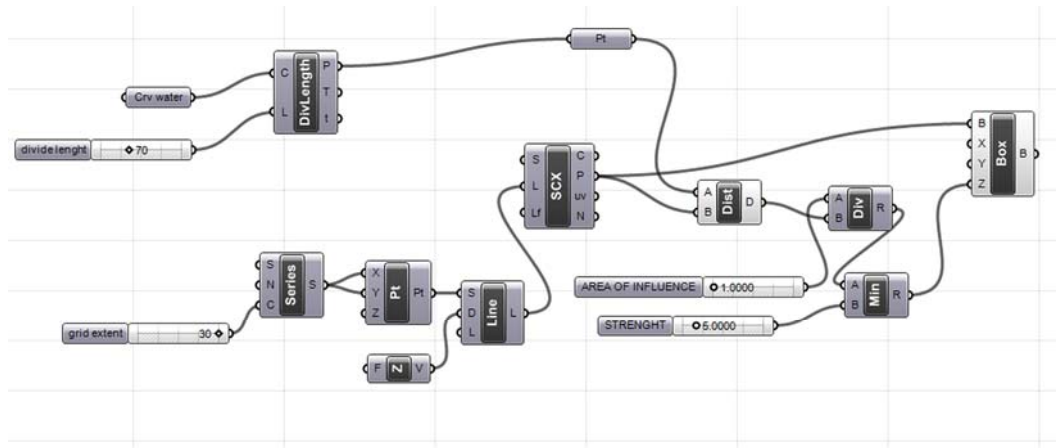


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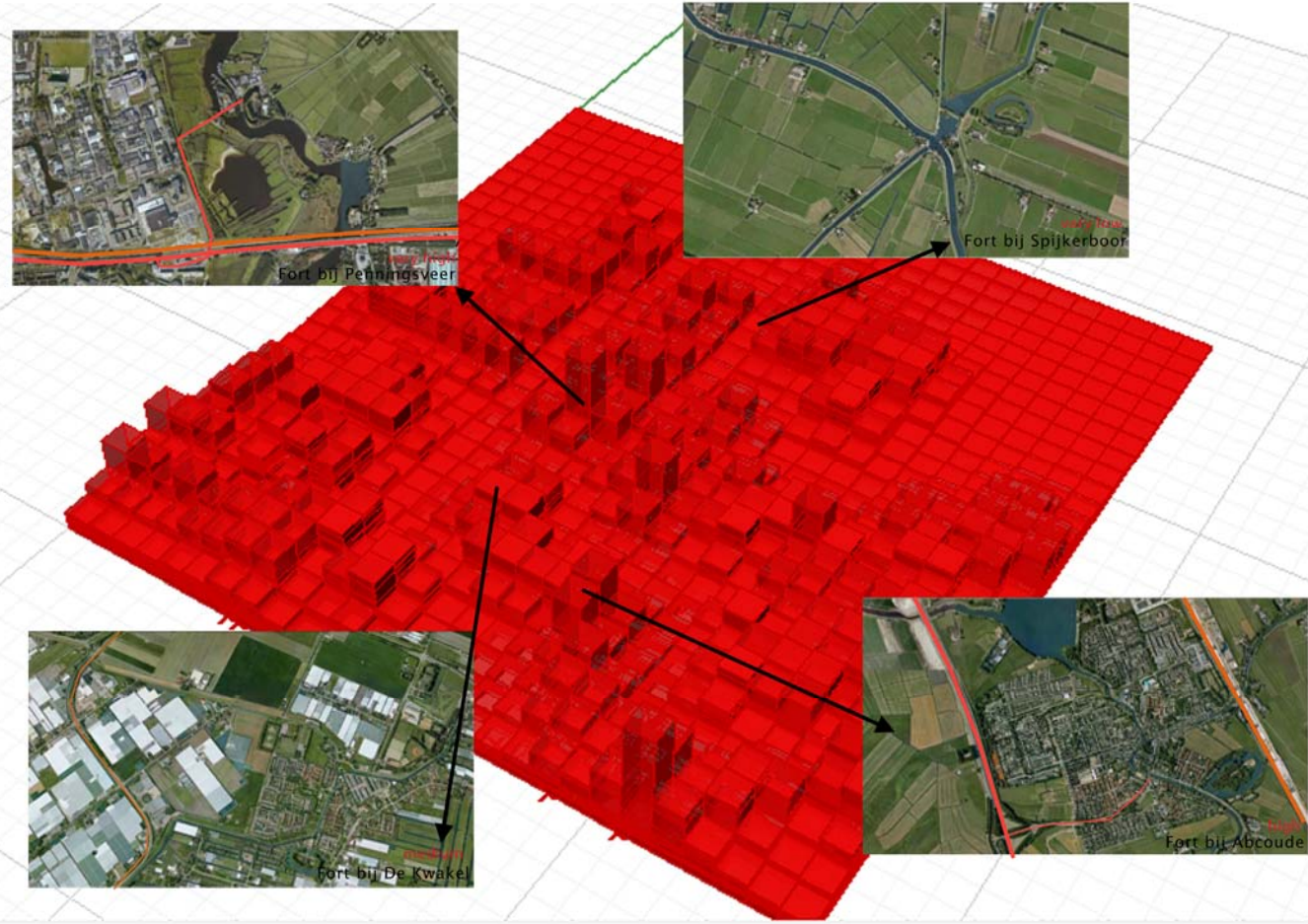


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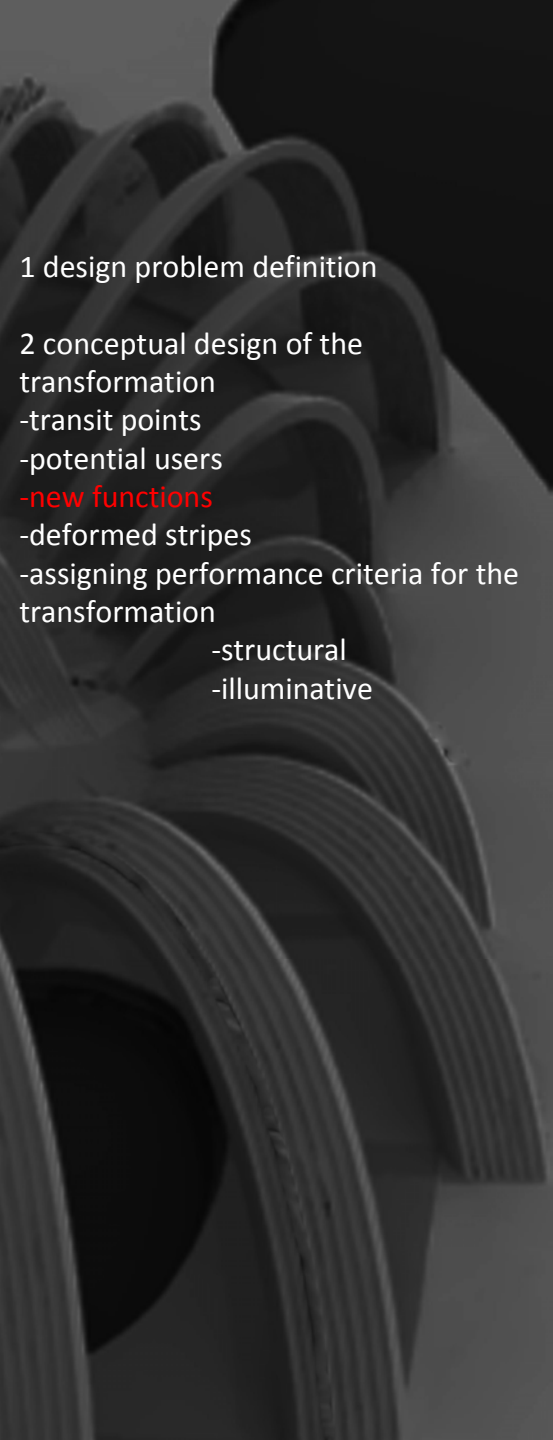
- 1 design problem definition
- 2 conceptual design of the transformation
 - transit points
 - potential users
 - new functions
 - deformed stripes
 - assigning performance criteria for the transformation
 - structural
 - illuminative



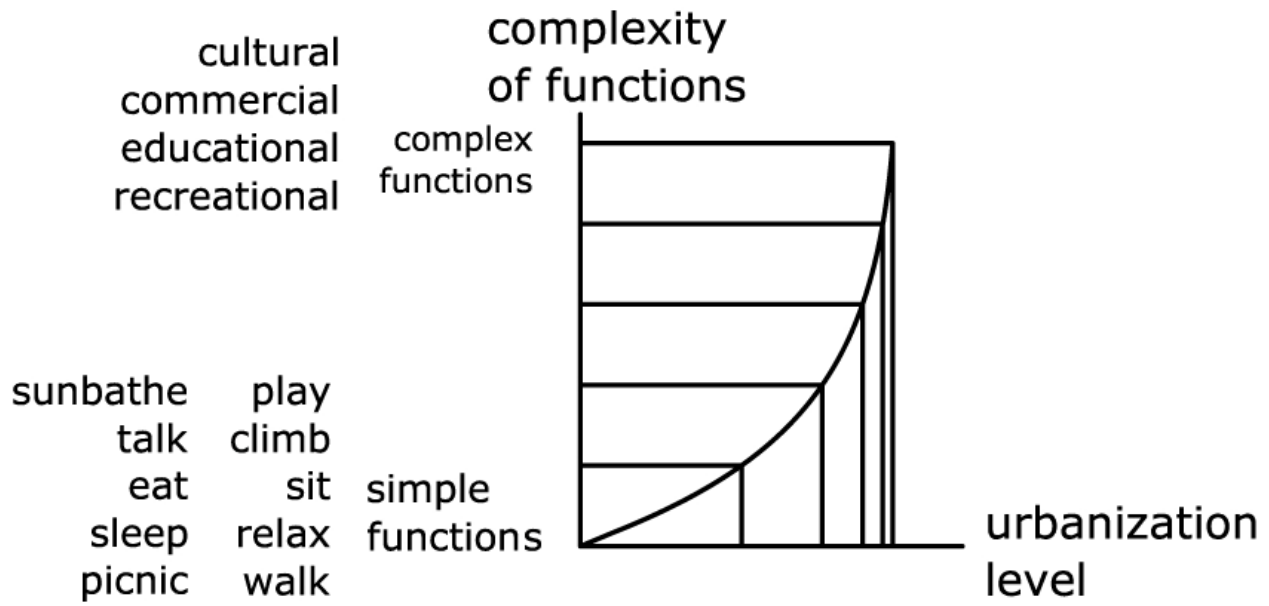
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- two groups of users
 - those that use the fort as a transfer area that connects the urban elements within the site
 - those that aim to do sight - seeing and spend time around the fort



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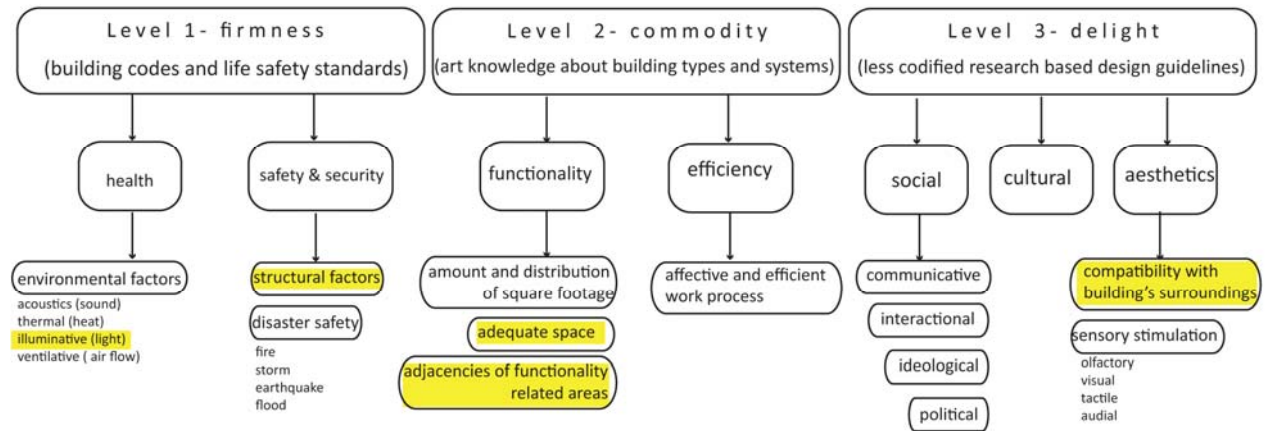
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1-health, safety and security performance
 -structural
 -illuminative

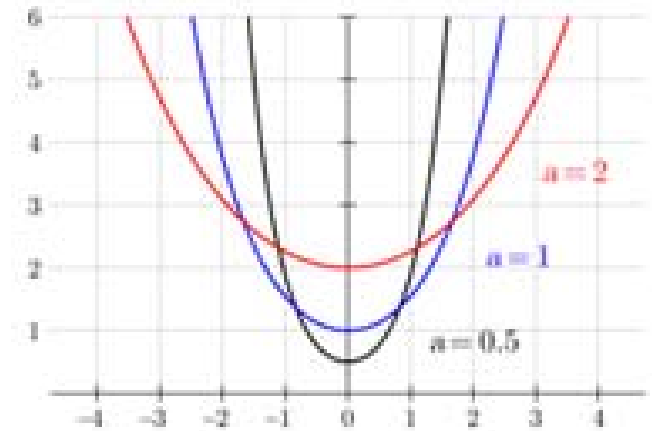
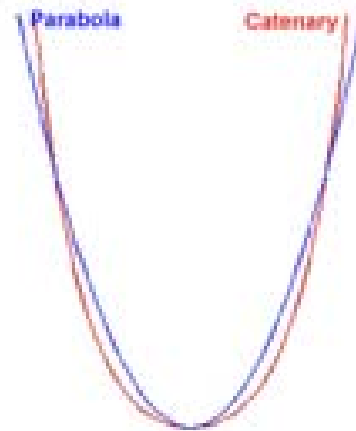
2-functional, efficiency performance
 -provide adequate space for required functions
 -provide connections between urban elements of site

3-psychological, social, cultural and aesthetic performance
 -conservation of the UNESCO Heritage site
 -compatibility with the surrounding

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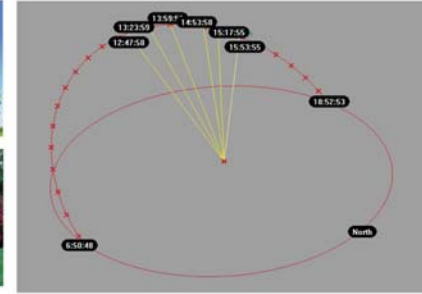
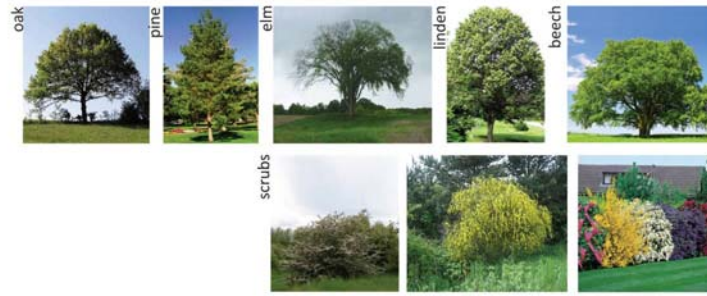
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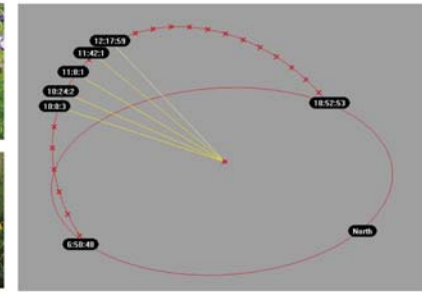
$$y = a \cosh\left(\frac{x}{a}\right) = \frac{a}{2} \left(e^{x/a} + e^{-x/a}\right)$$

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Woody Plants

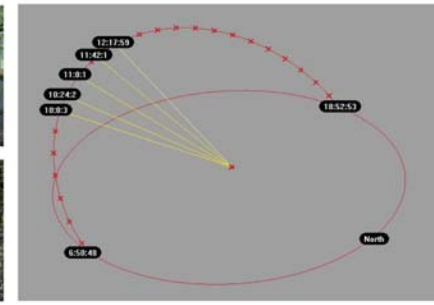
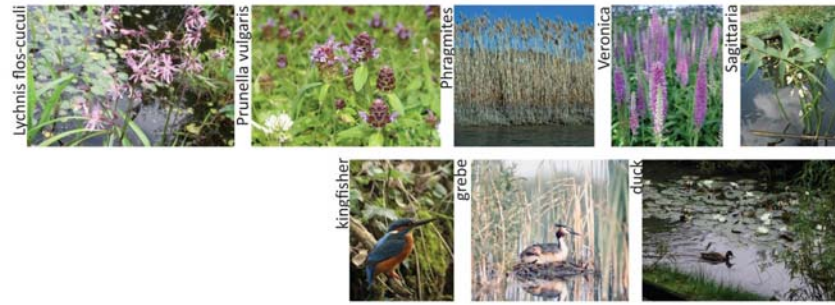


Grassland

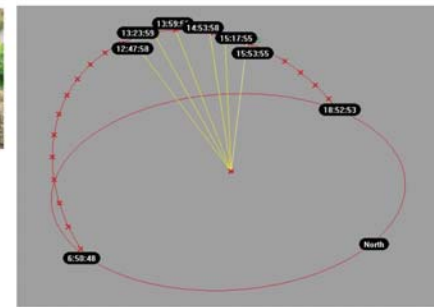


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Water Bodies



Micro climates



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 - urban design (1/1.000)
 - building design (1/200)
 - production of scale models

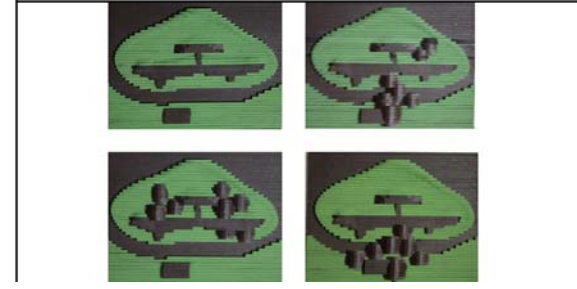
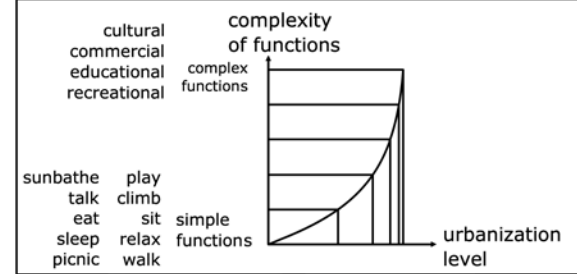
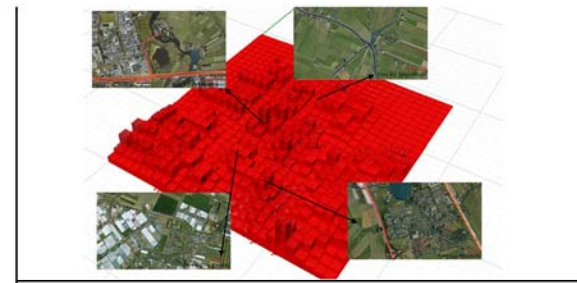
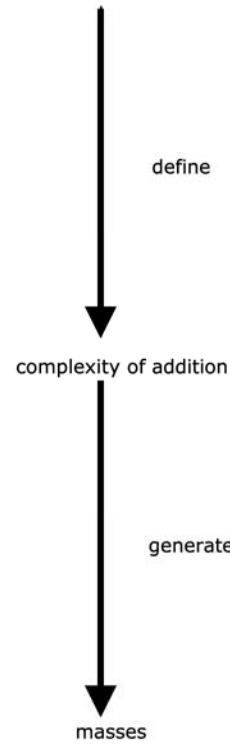
- A form finding instance 1 dependency chain
 - stage 1
 - stage 2
 - stage 3

- B form finding instance 2 dependency chain
 - stage 1
 - stage 2
 - stage 3
 - stage 4

	Level 1 performances	Level 2 performances	Level 3 performances
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regional design (1/50.000)		provide adequate space for required functions	
urban design (1/1.000)		provide connections between urban elements	conservation of the UNESCO Heritage site
building design (1/200)	structural performance illuminative performance		
production of scale models			compatibility with the surrounding

urbanization levels of each site



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dependency chain

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B form finding instance 2

dependency chain

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- stage 2
- stage 3
- stage 4



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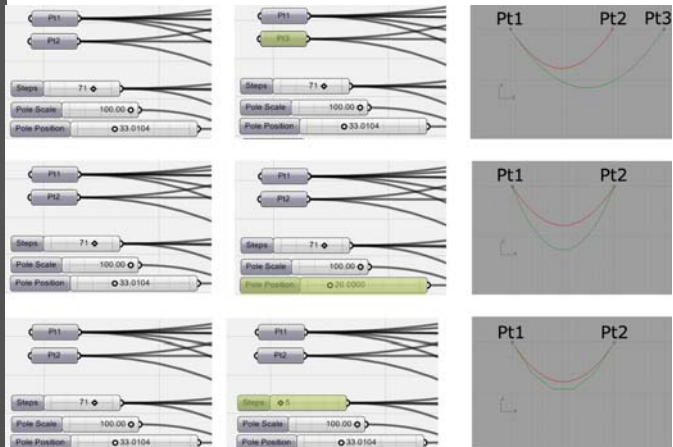
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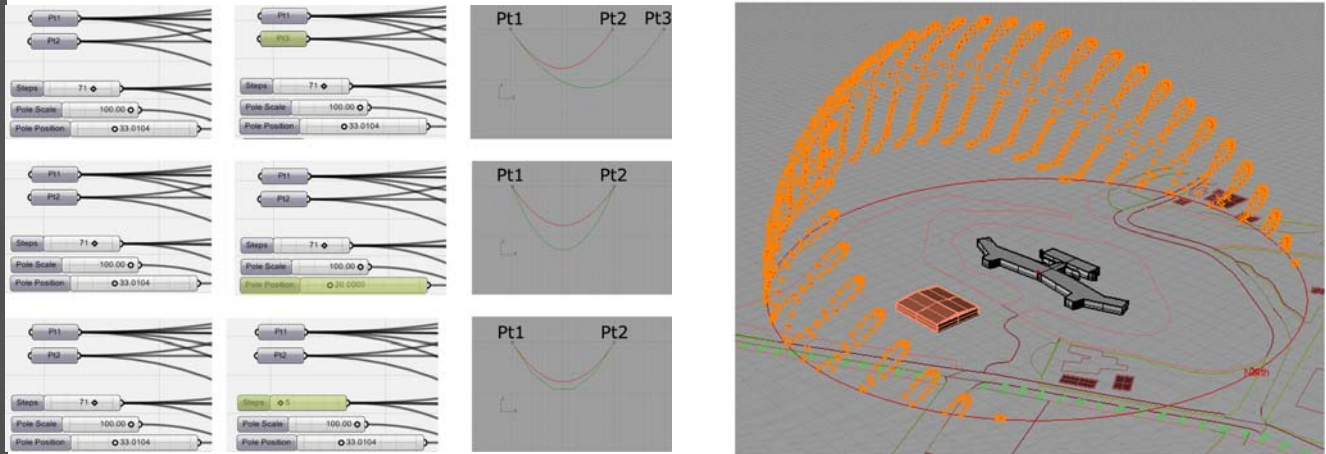
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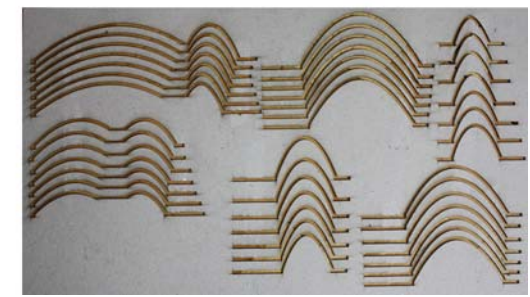
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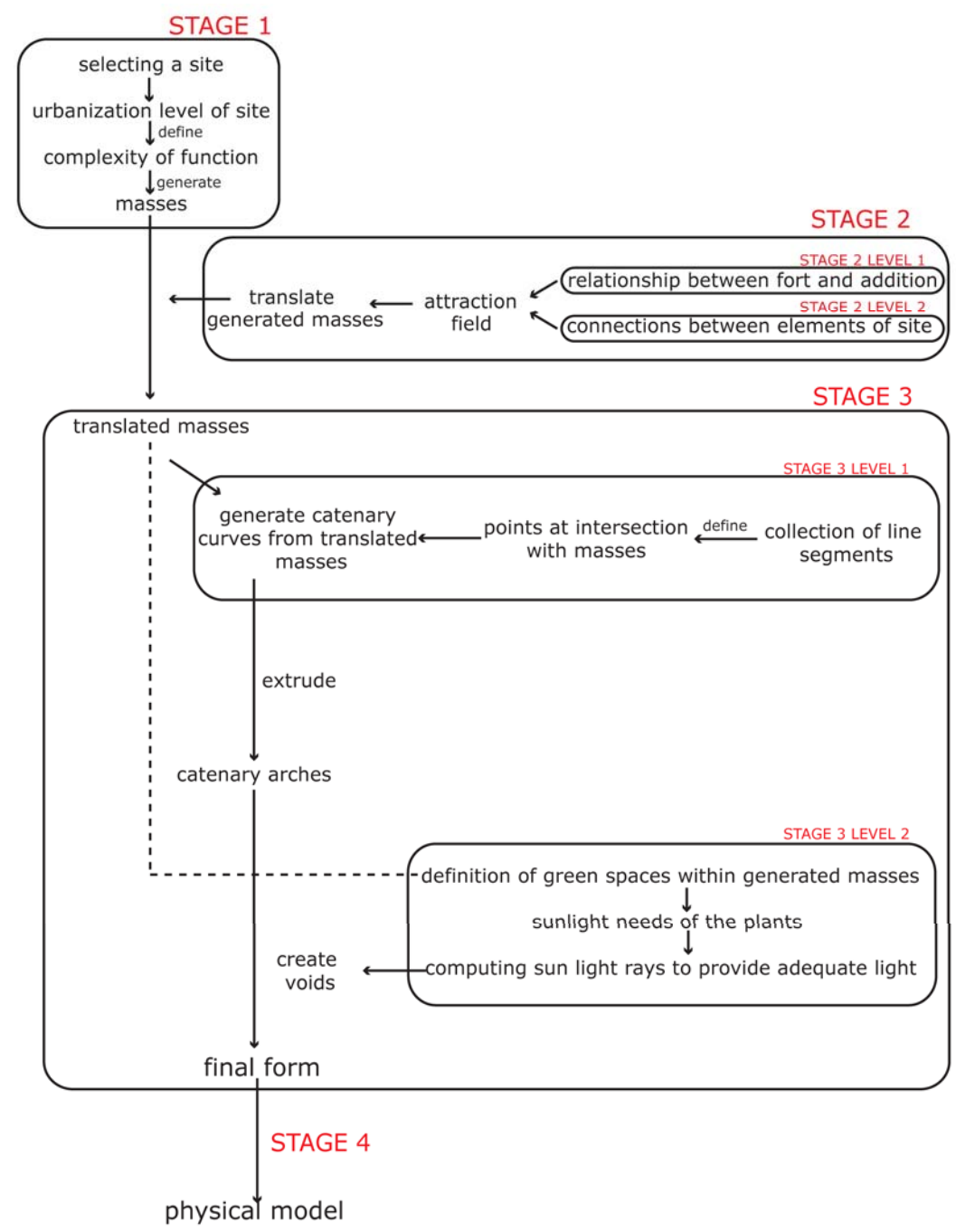
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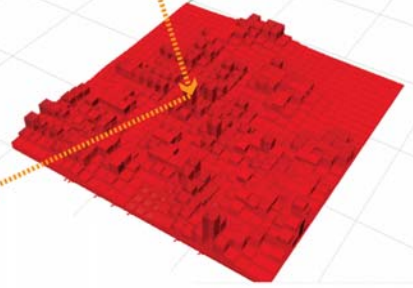
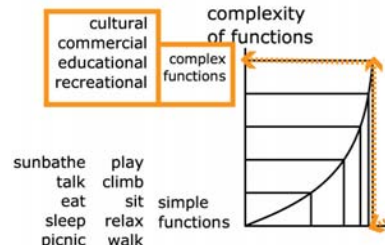
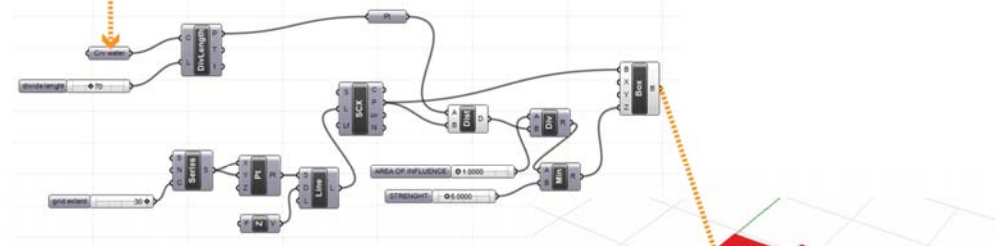
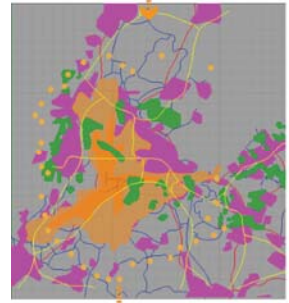
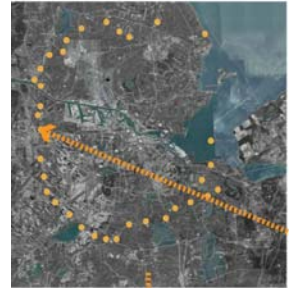
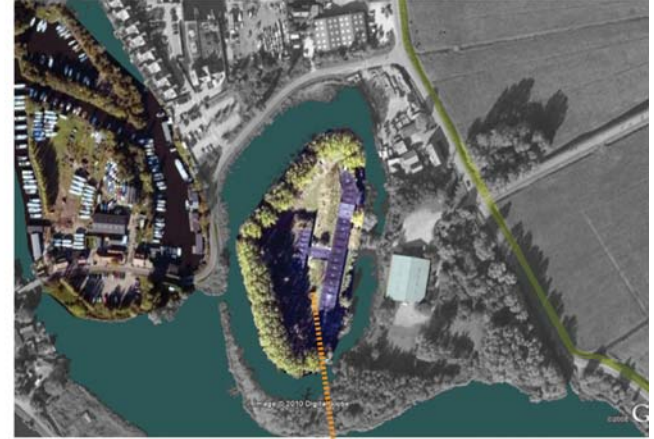
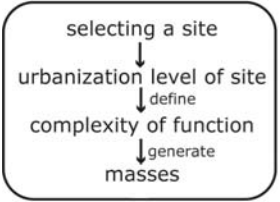
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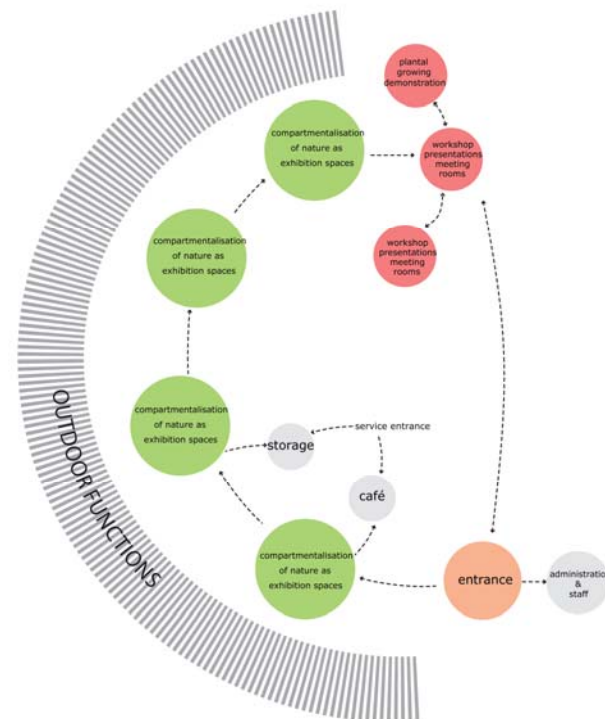
- B form finding instance 2
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	outdoor functions		indoor functions
transportation points	car and bike park dock for small boats marina	entrance	info desk wc's and lockers botanical garden shop
urban furniture	sit relax sunbathe sleep	café	kitchen service space food storage
walk	bridge connecting site to dike over road bridge connecting site to marina over water	educational	workshop rooms presentation rooms plantal growing demonstration rooms meeting rooms
play	children's' playground skate park cross cycle park	compartmentalisation of nature as exhibition spaces	grassland forest water body microclimate
		storage	service entrance loading/unloading receiving office botanical maintenance materials storage
		rooms for administration and staff	



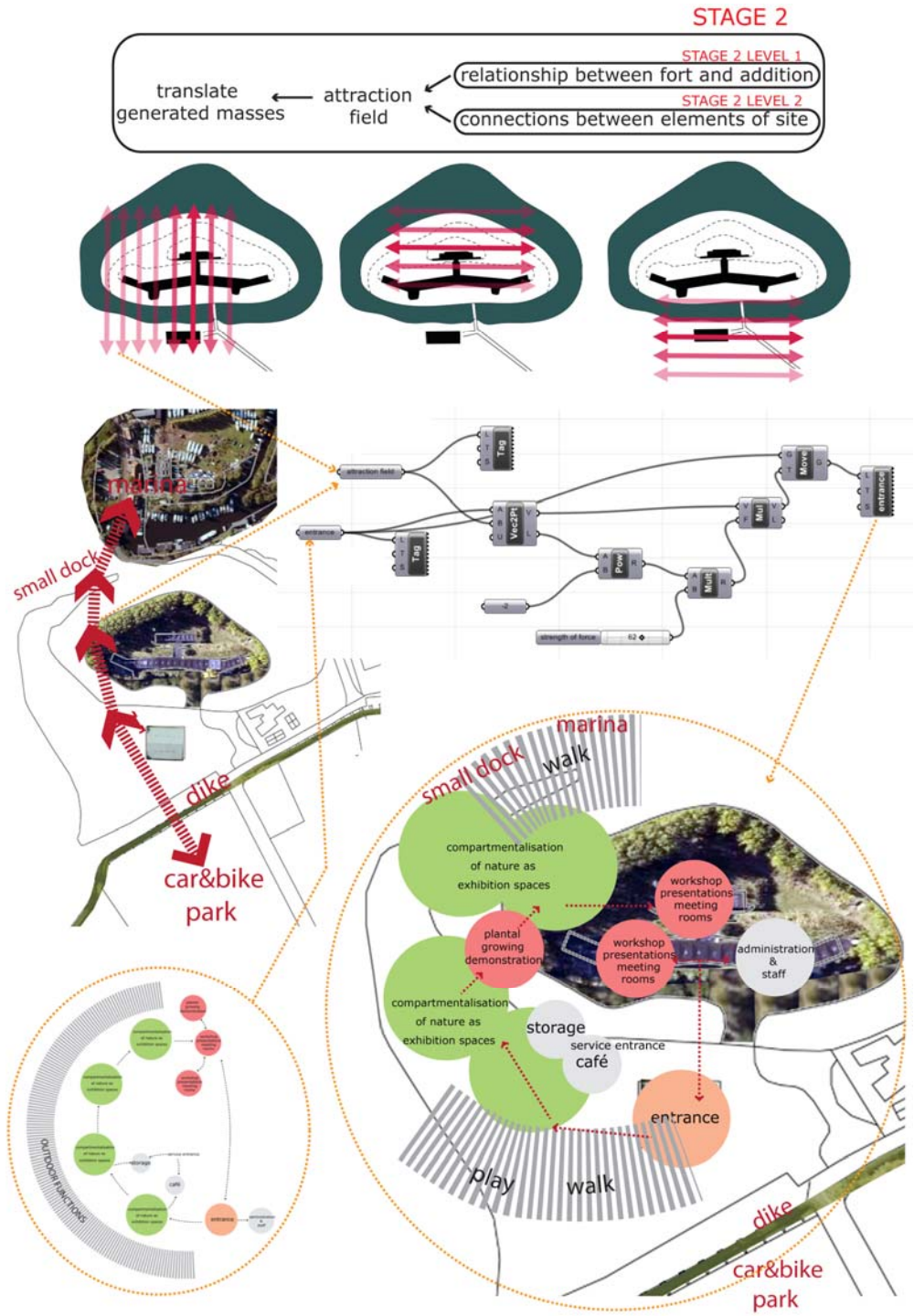
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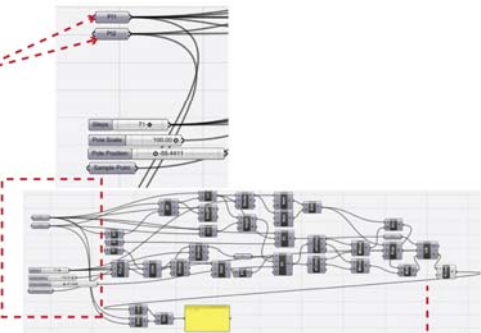
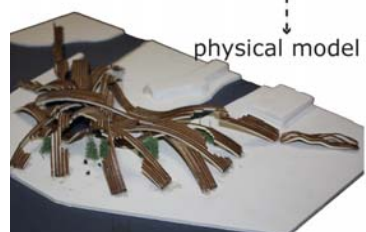
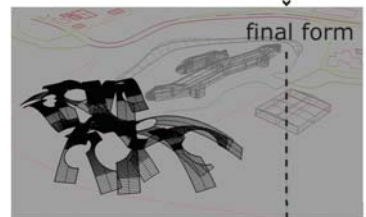
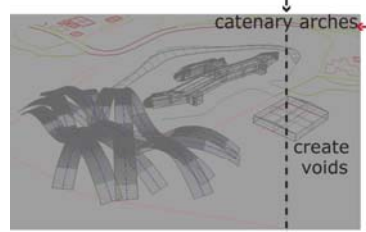
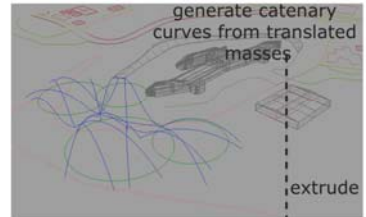
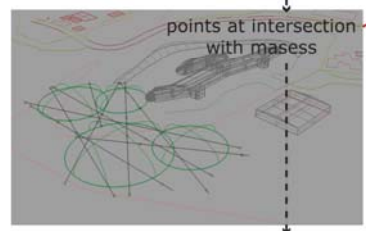
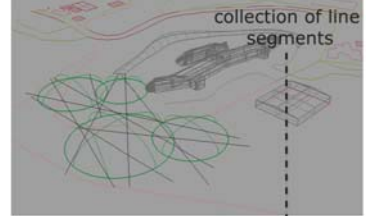
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2 conceptual design of the transformation

3 performative design model

- regional design (1/50.000)
- urban design (1/1.000)
- building design (1/200)
- production of scale models

A form finding instance 1

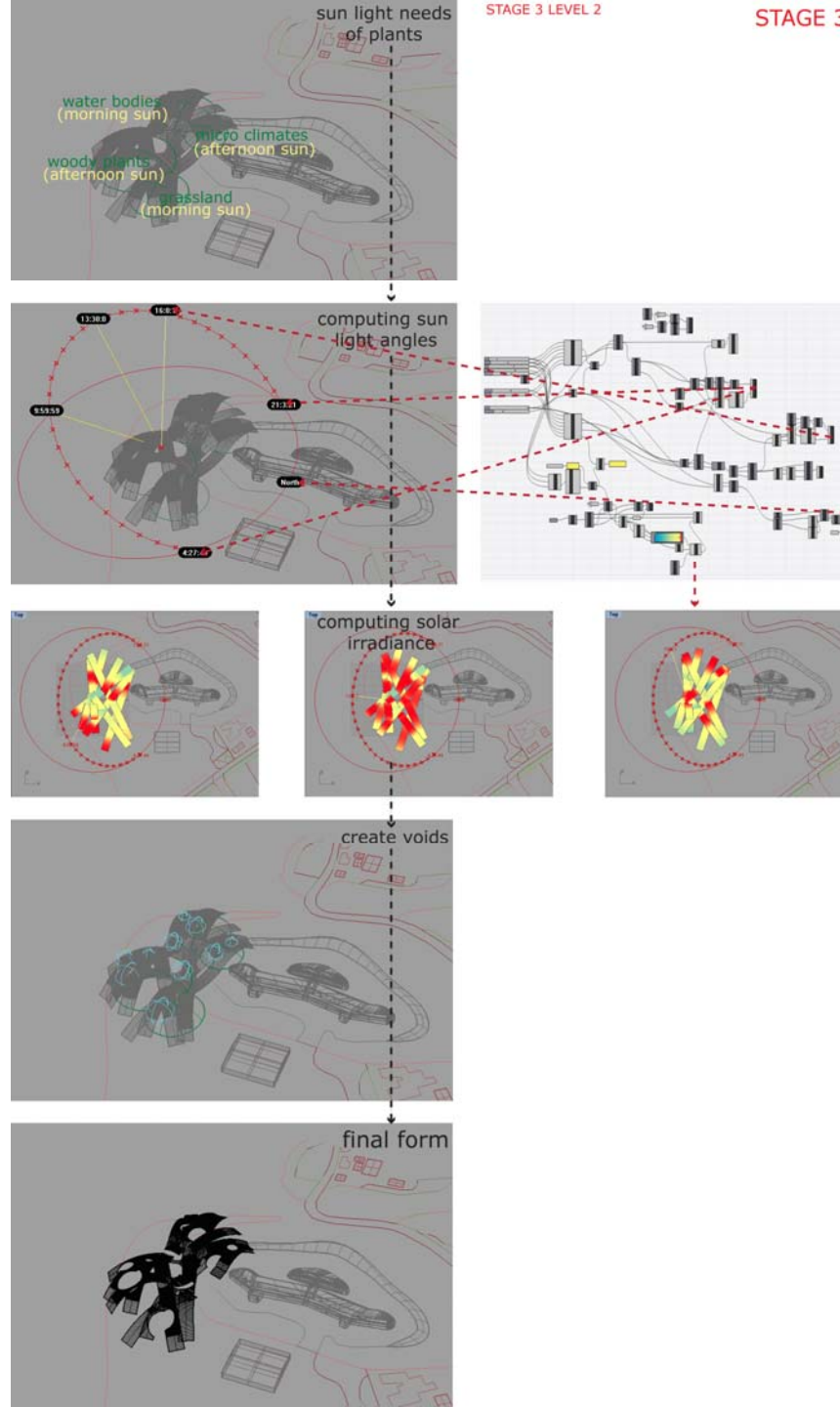
dependency chain

- stage 1
- stage 2
- stage 3

B form finding instance 2

dependency chain

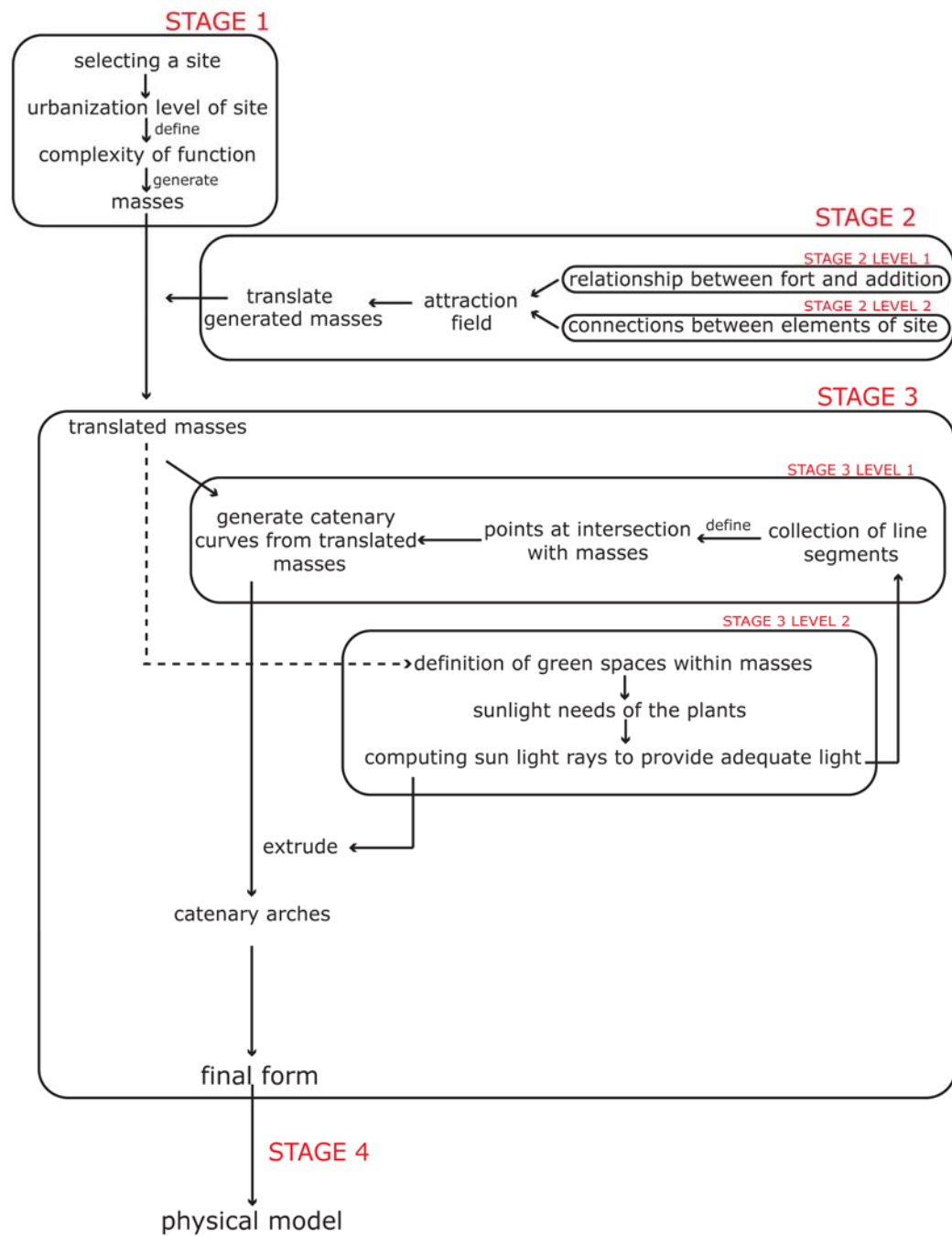
- stage 1
- stage 2
- stage 3
- stage 4



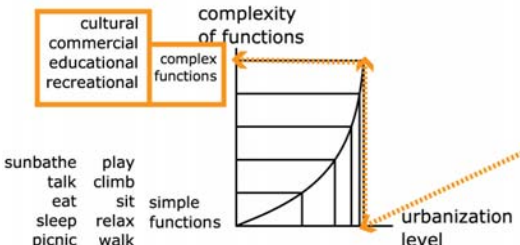
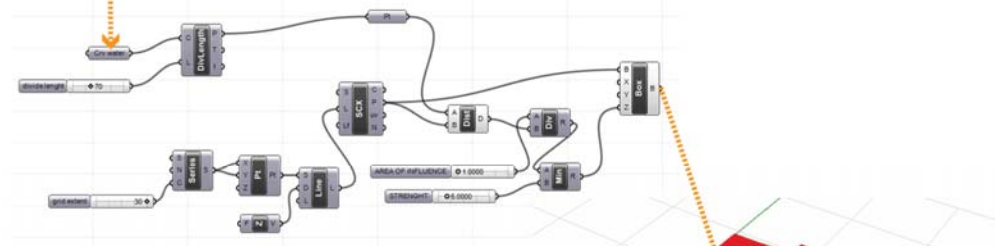
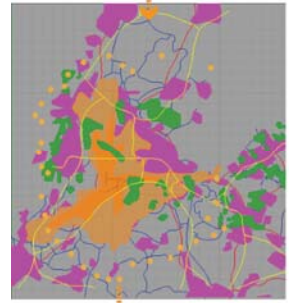
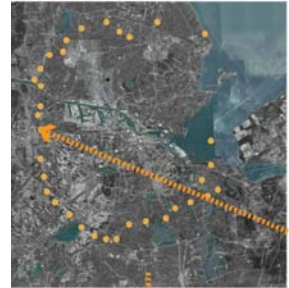
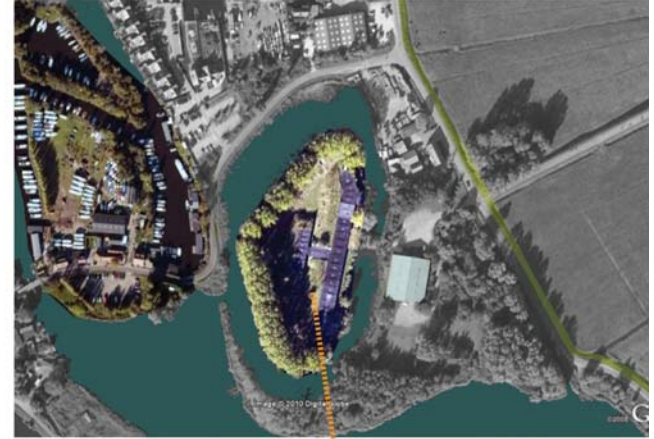
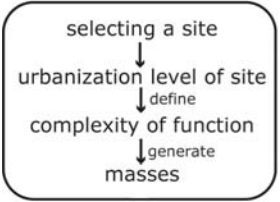
- 1 design problem definition
- 2 conceptual design of the transformation
- 3 performative design model
 - regional design (1/50.000)
 - urban design (1/1.000)
 - building design (1/200)
 - production of scale models

- A form finding instance 1
dependency chain
- stage 1
 - stage 2
 - stage 3

- B form finding instance 2
dependency chain
- stage 1
 - stage 2
 - stage 3
 - stage 4



STAGE 1



1 design problem definition

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3 performative design model
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 -production of scale models

A form finding instance 1
 dependency chain
 -stage 1
 -stage 2
 -stage 3

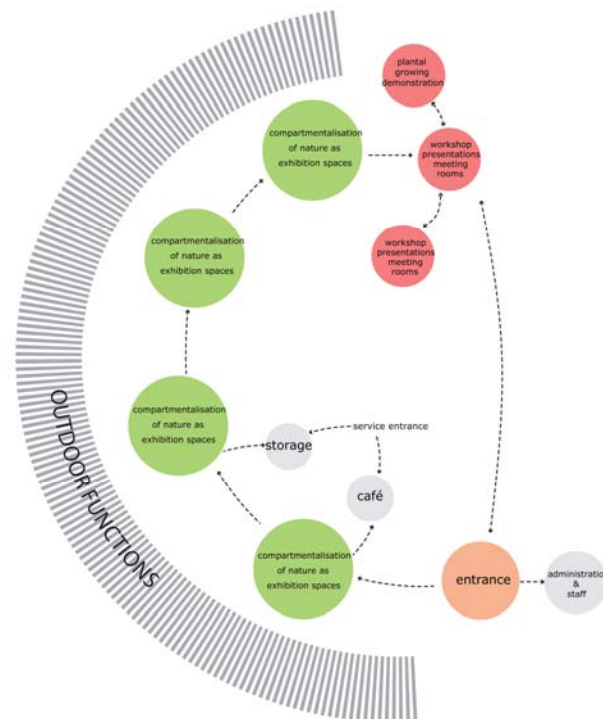
B form finding instance 2
 dependency chain
 -stage 1
 -stage 2
 -stage 3
 -stage 4

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 - stage 2
 - stage 3

- B form finding instance 2
dependency chain
- stage 1
 - stage 2
 - stage 3
 - stage 4

outdoor functions		indoor functions	
transportation points	car and bike park dock for small boats marina	entrance	info desk wc's and lockers botanical garden shop
urban furniture	sit relax sunbathe sleep	café	kitchen service space food storage
walk	bridge connecting site to dike over road bridge connecting site to marina over water	educational	workshop rooms presentation rooms plantal growing demonstration rooms meeting rooms
play	children's' playground skate park cross cycle park	compartmentalisation of nature as exhibition spaces	grassland forest water body microclimate
		storage	service entrance loading/unloading receiving office botanical maintenance materials storage
		rooms for administration and staff	



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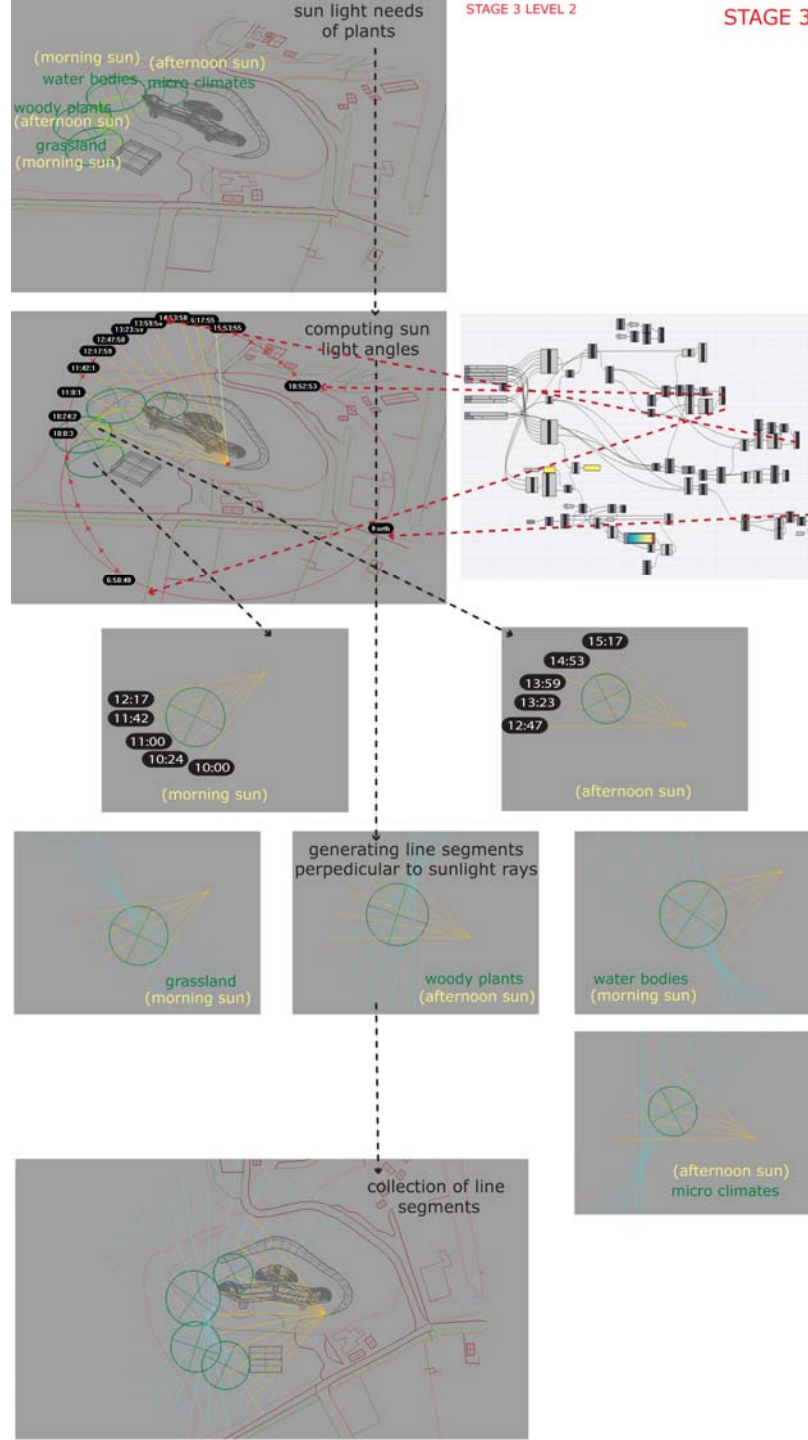
dependency chain

- stage 1
- stage 2
- stage 3

B form finding instance 2

dependency chain

- stage 1
- stage 2
- stage 3
- stage 4



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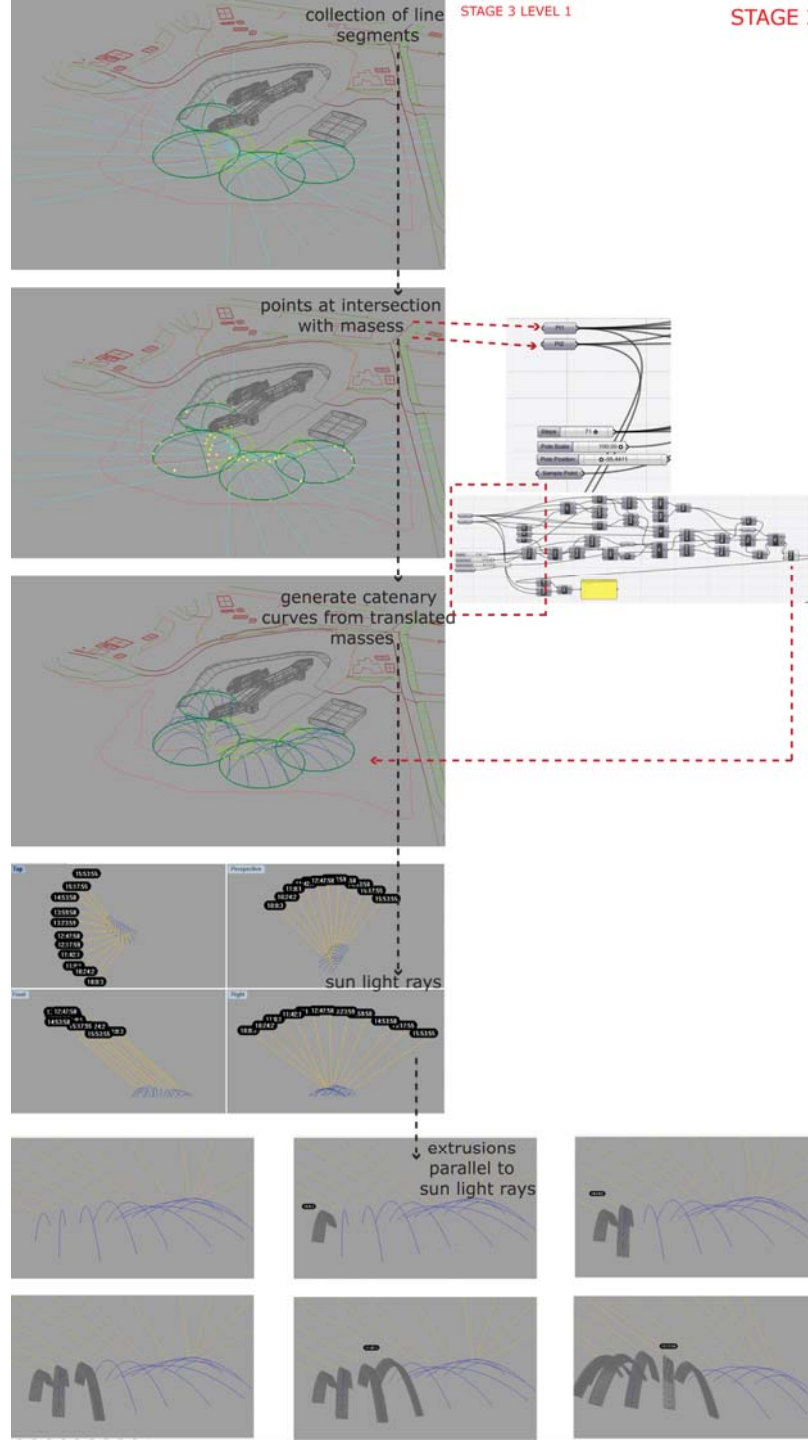
dependency chain

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- stage 2
- stage 3

B form finding instance 2

dependency chain

- stage 1
- stage 2
- stage 3
- stage 4



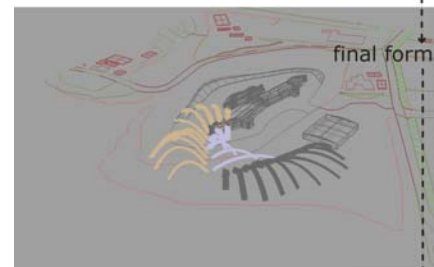
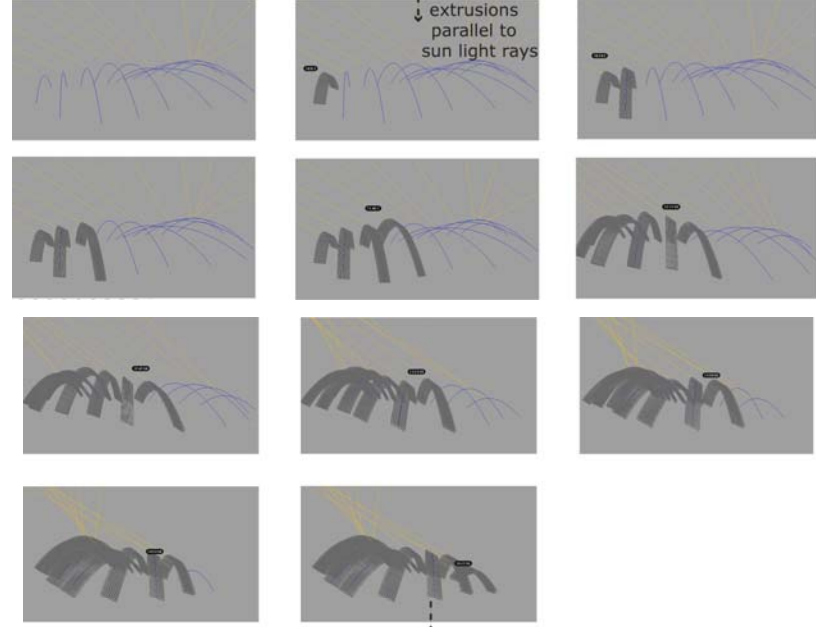
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A form finding instance 1

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-stage 2

-stage 3

B form finding instance 2

dependency chain

-stage 1

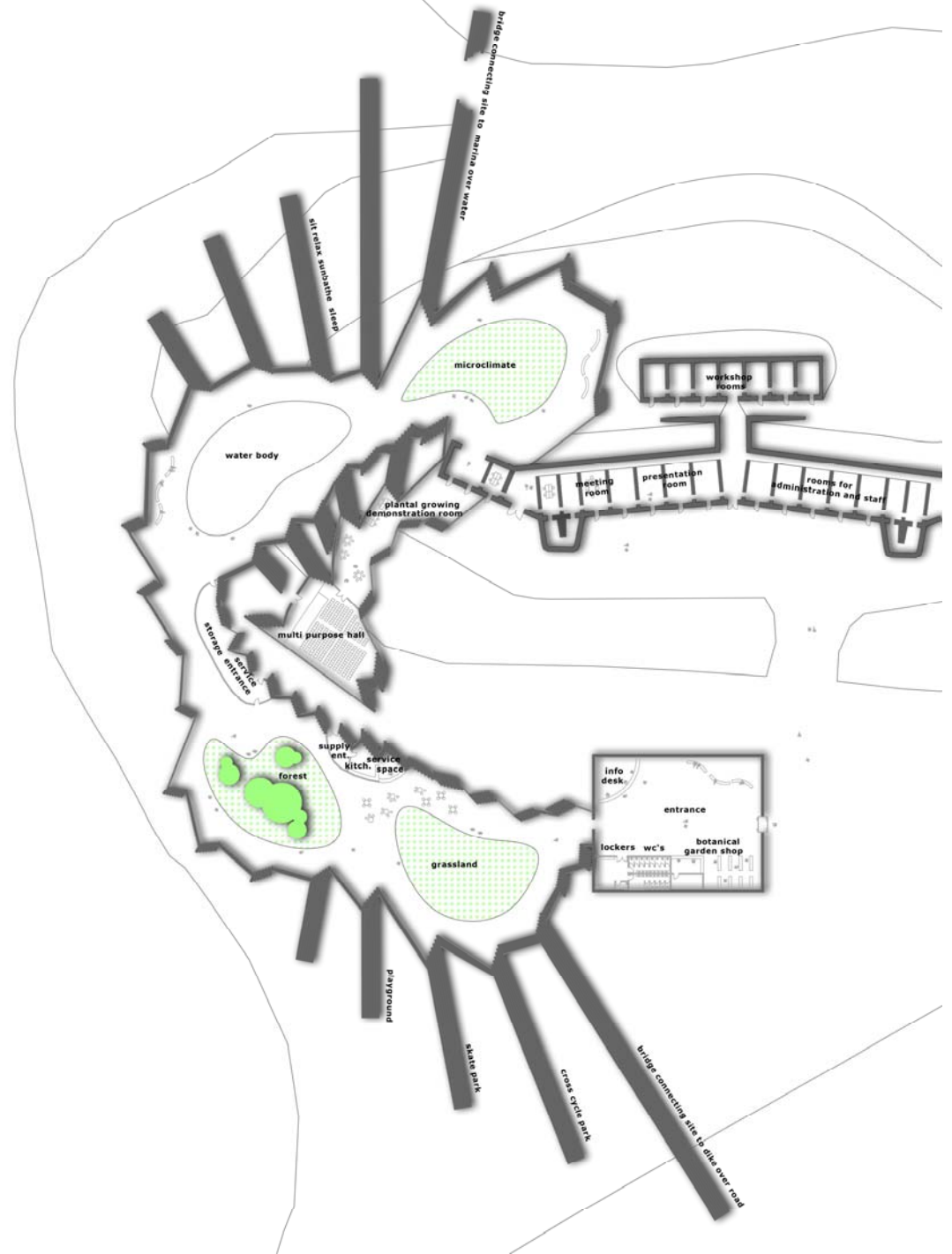
-stage 2

-stage 3

-stage 4



- 1 design problem definition
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 - 4 building design
- plan
 - section
 - visualization
 - physical model
 - why performative



1 design problem definition

2 conceptual design of the transformation

3 performative design model

4 building design

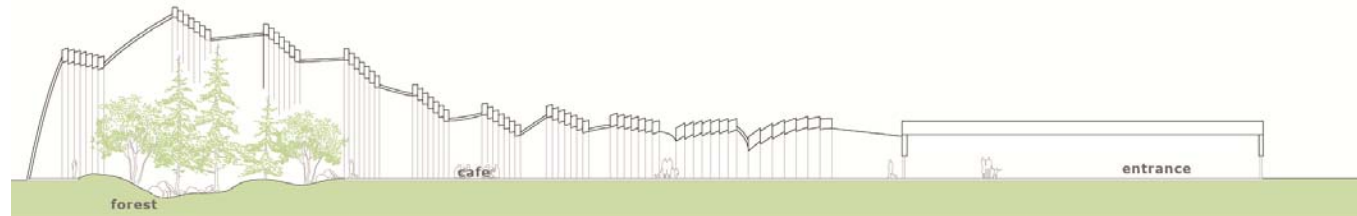
-plan

-section

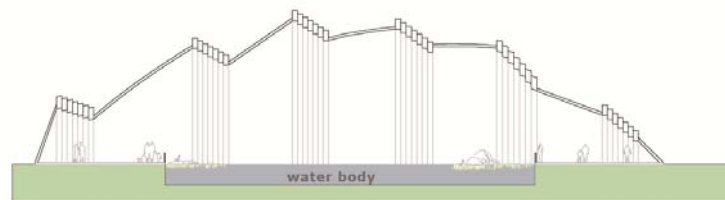
-visualization

-physical model

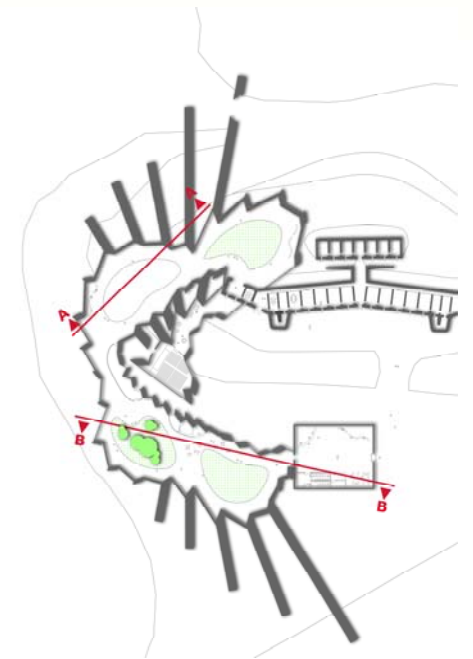
-why performative



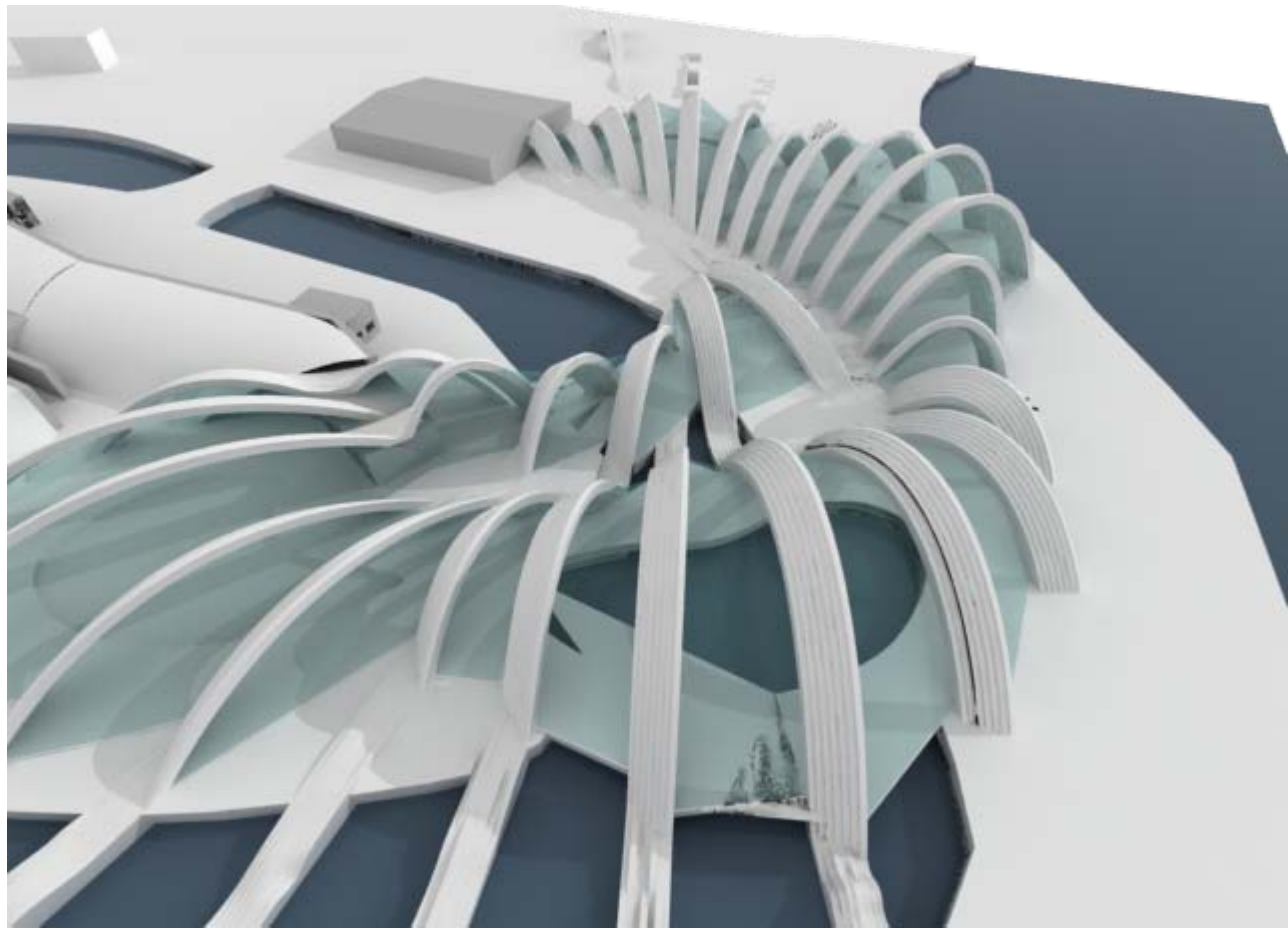
section BB



section AA



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3 performative design model

4 building design

-plan
-section

-visualization

-physical model
-why performative



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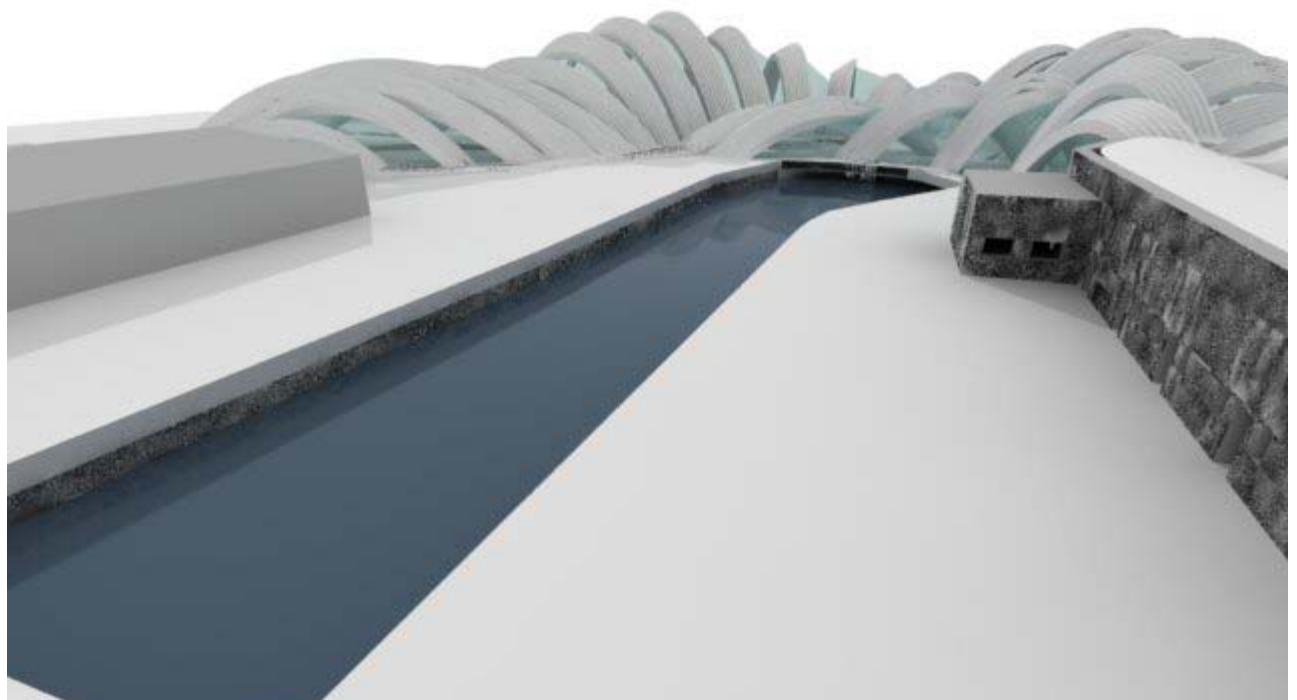
-plan

-section

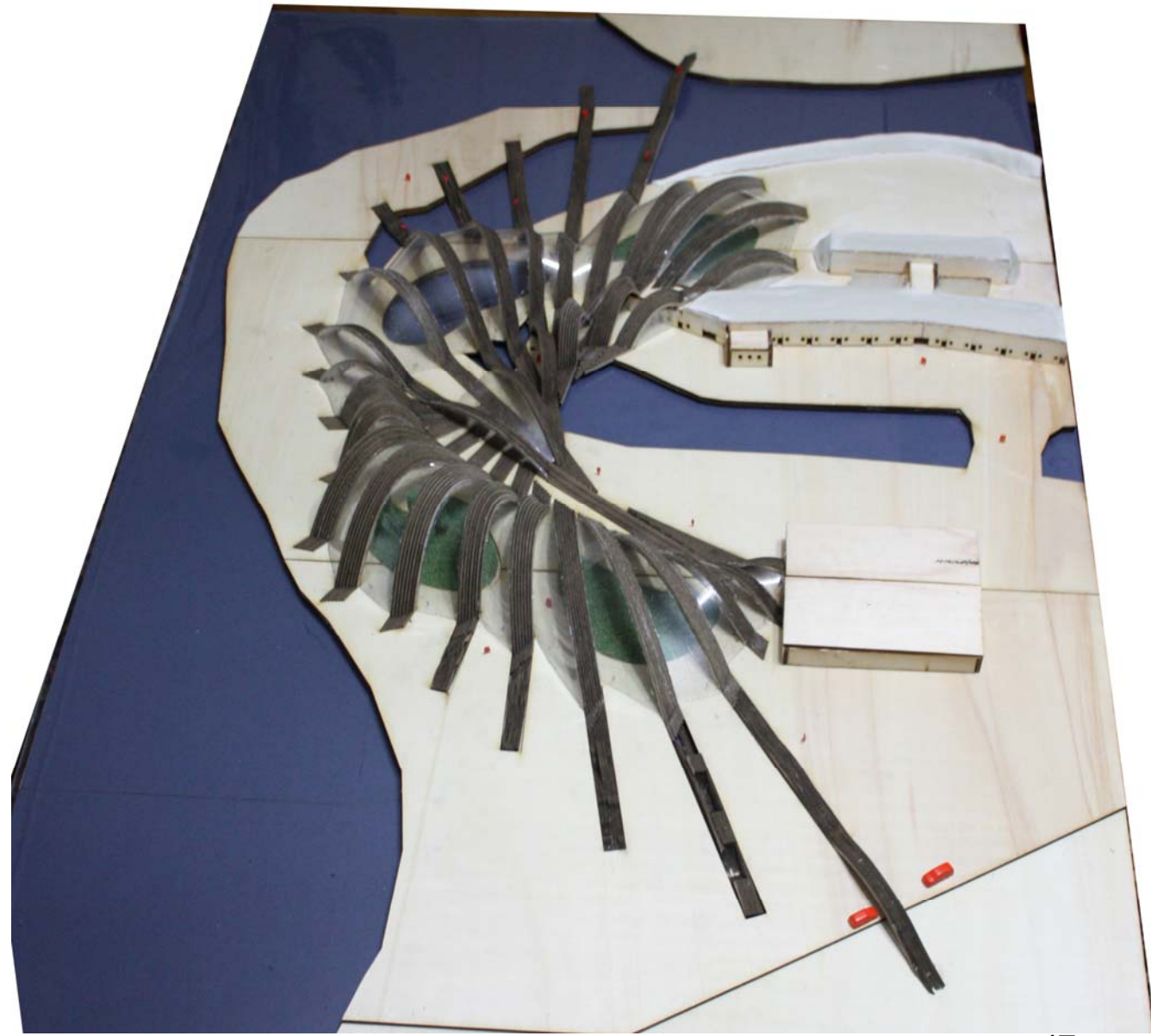
-visualization

-physical model

-why performative



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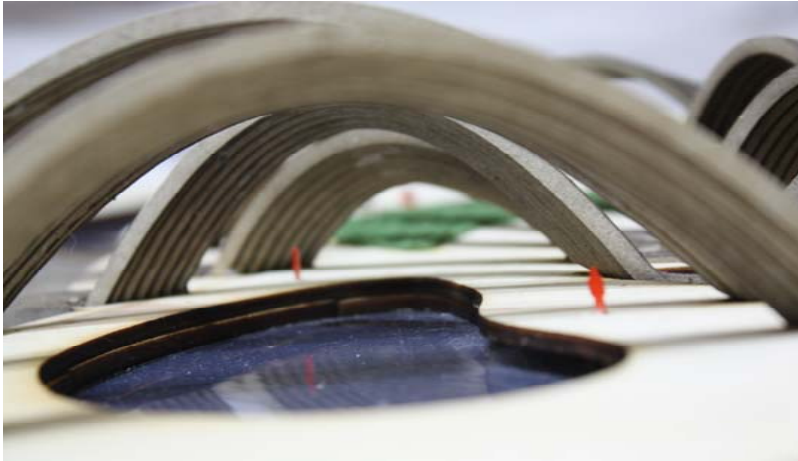
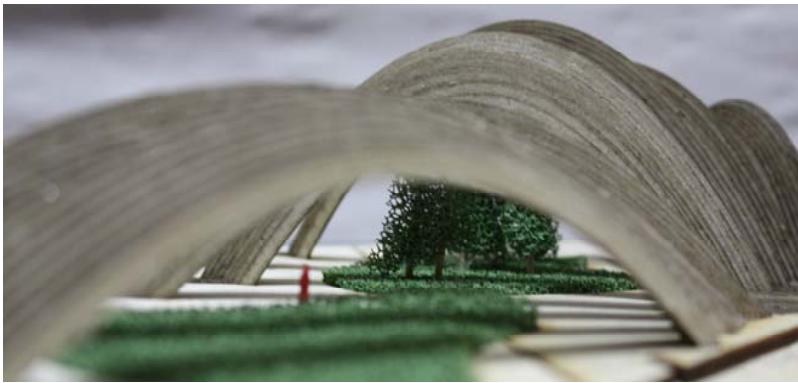
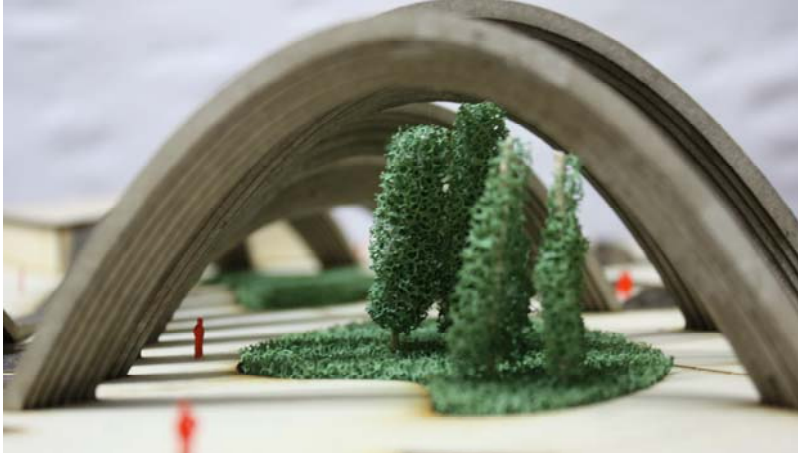
1 design problem definition

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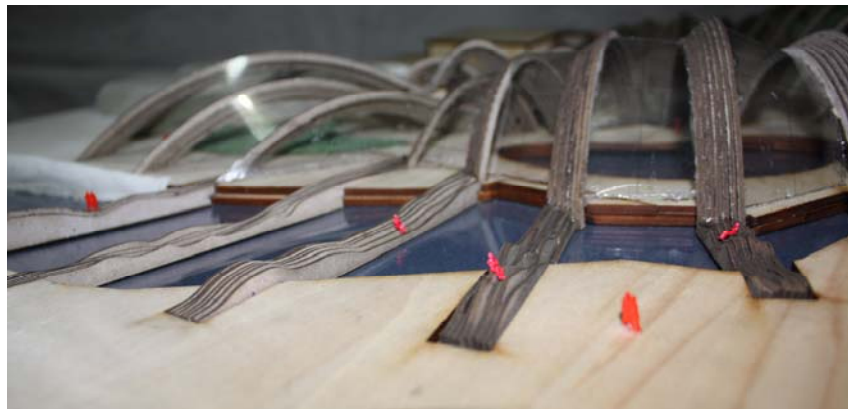
-plan

-section

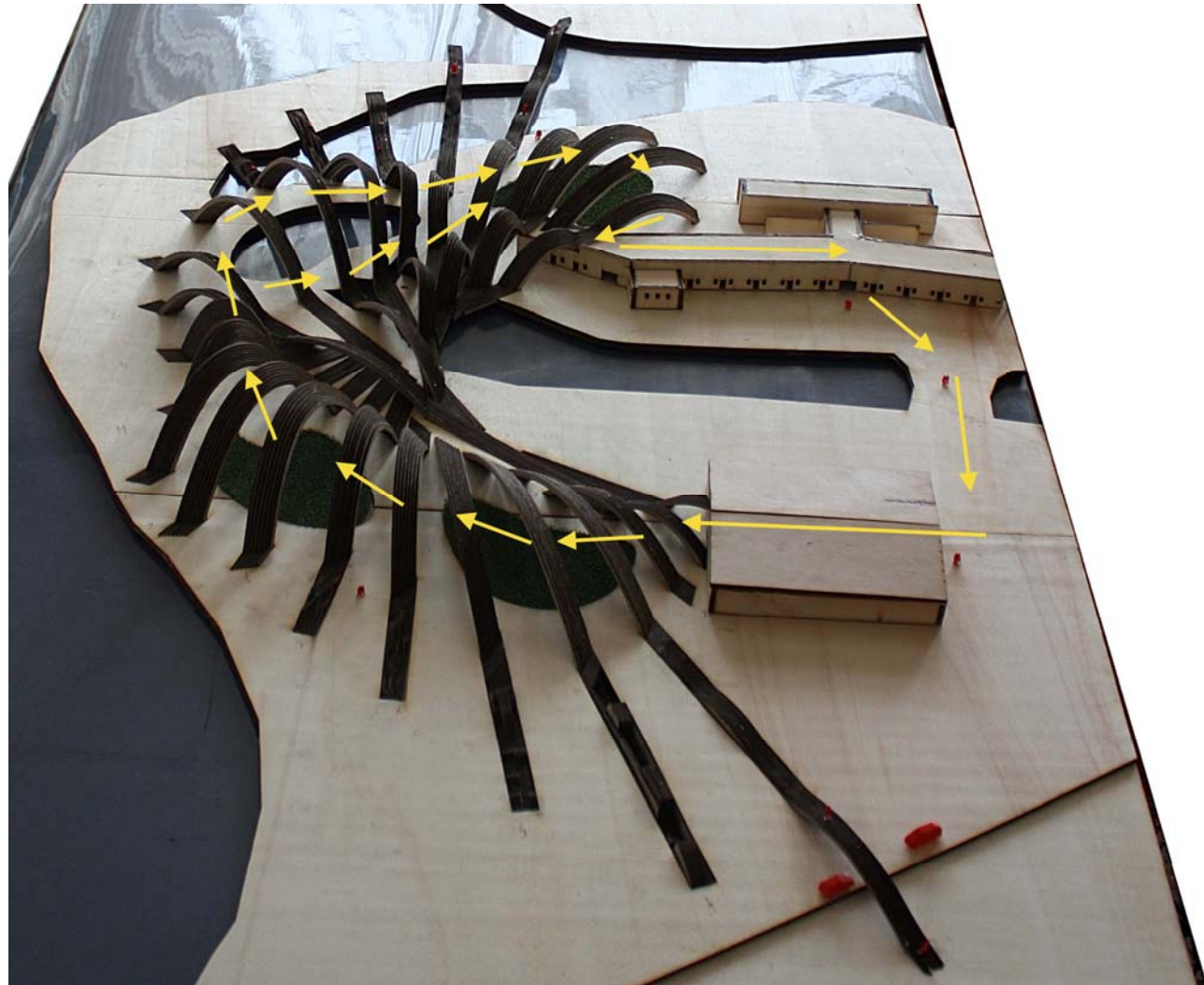
-visualization

-physical model

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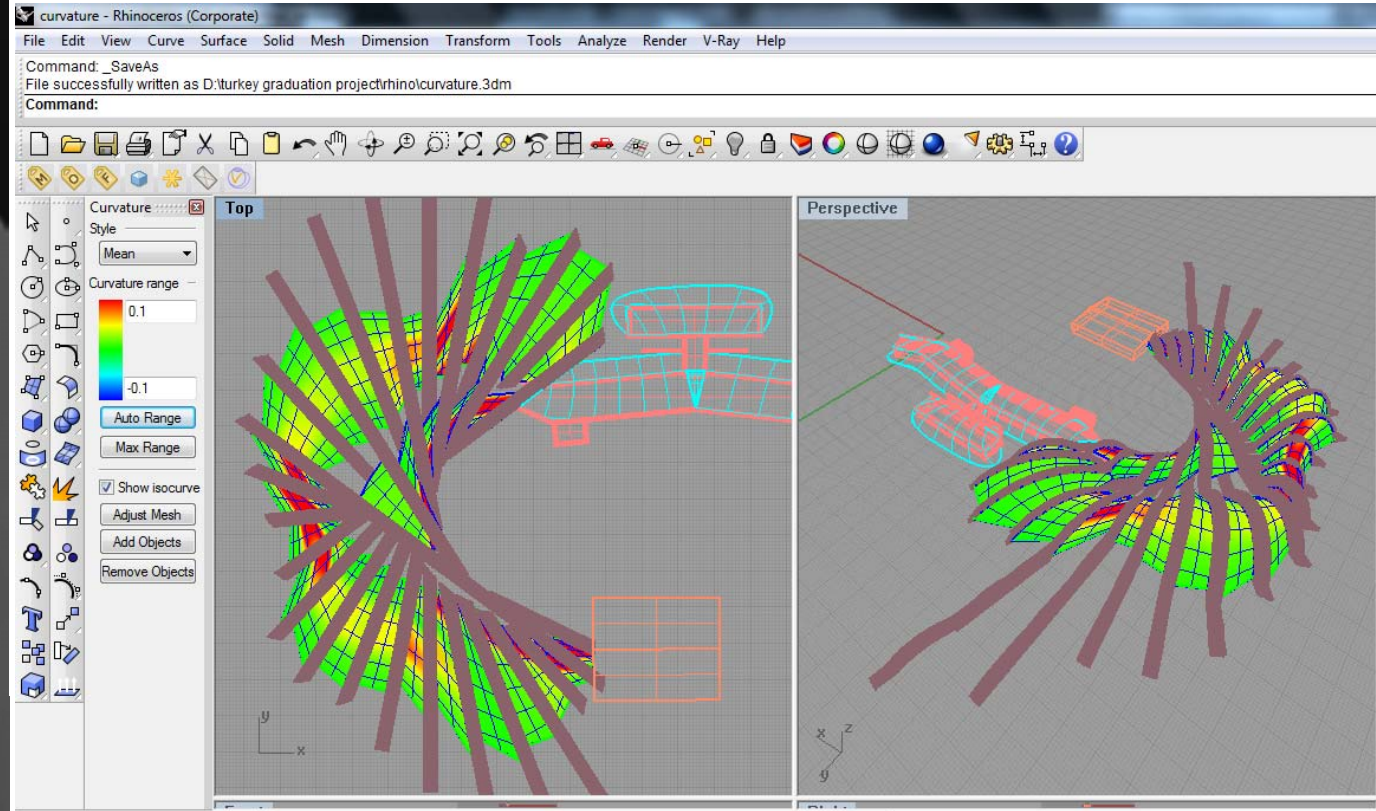


revitalizing the fort as a new attraction point for new users

provide direct connection to the fort and the barrack

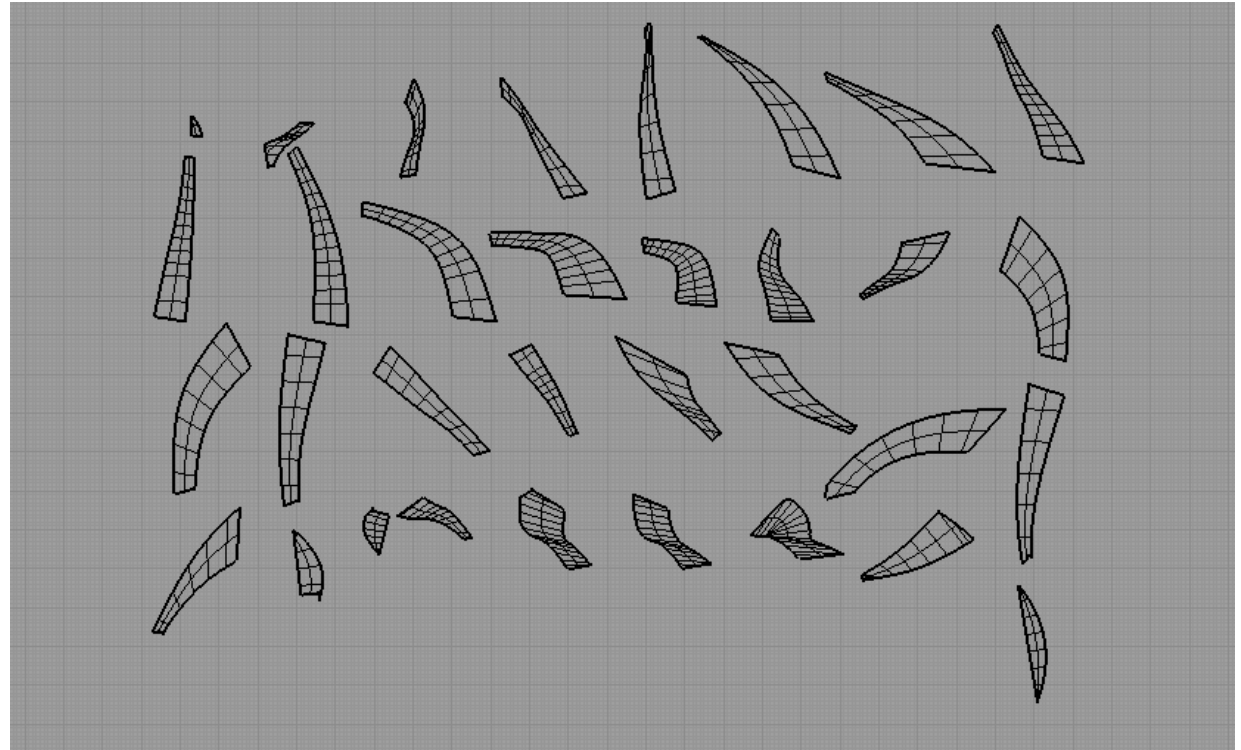
directing the users to experience the fort

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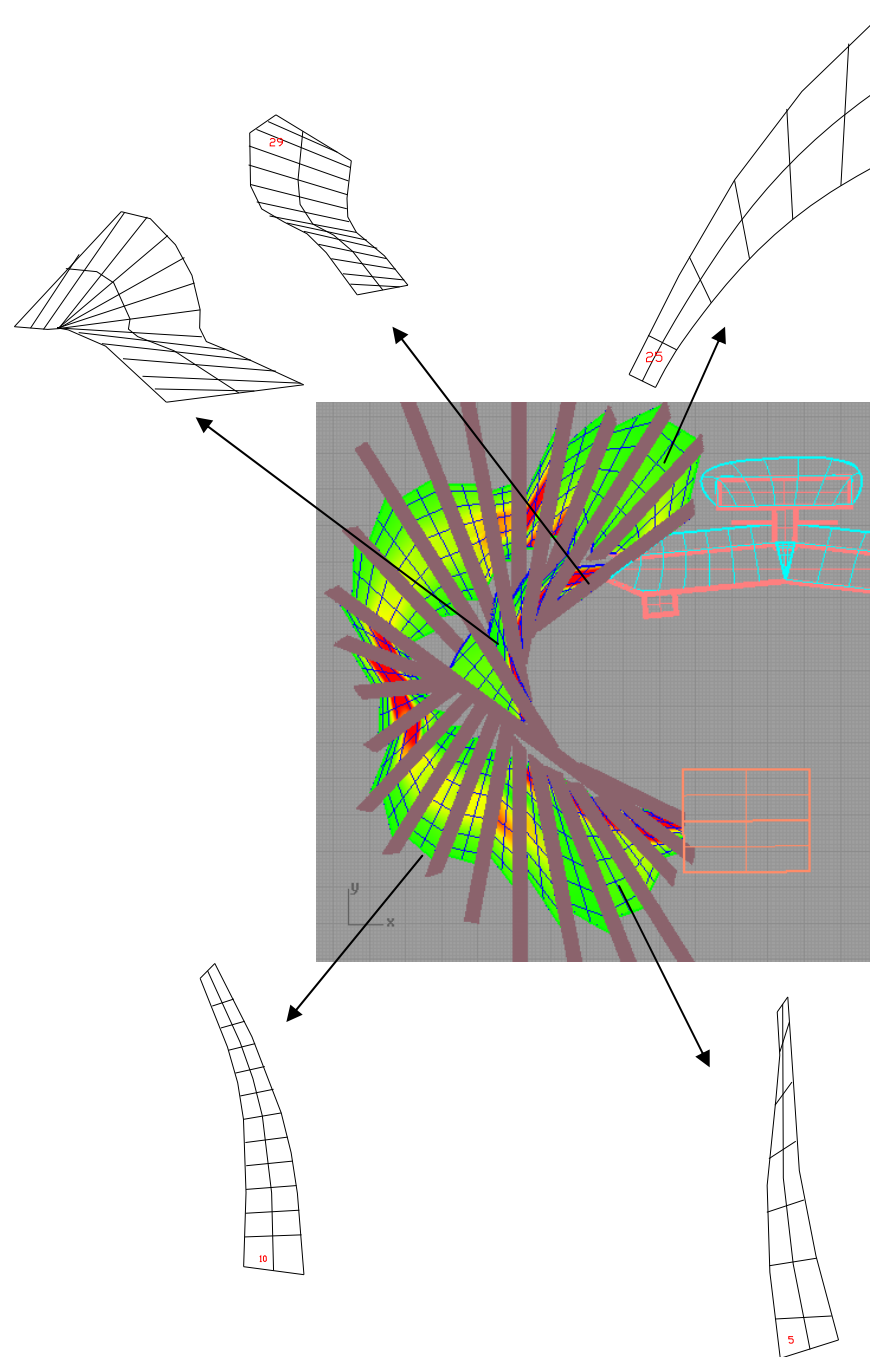
curvature analysis

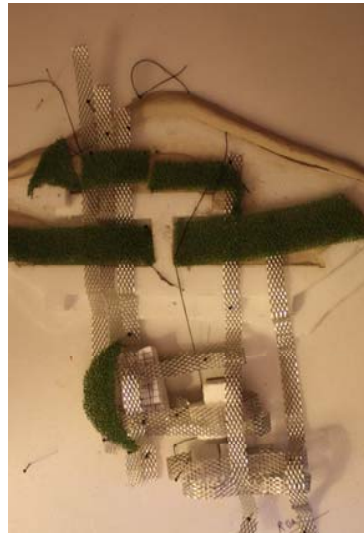
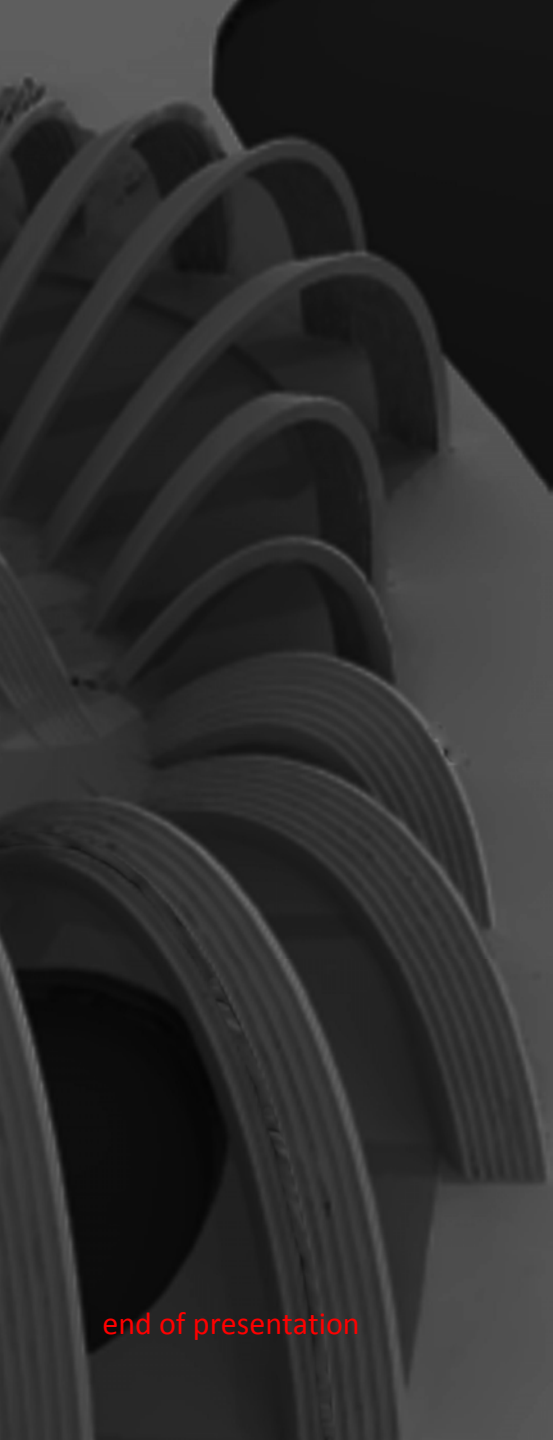
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Unroll glass parts

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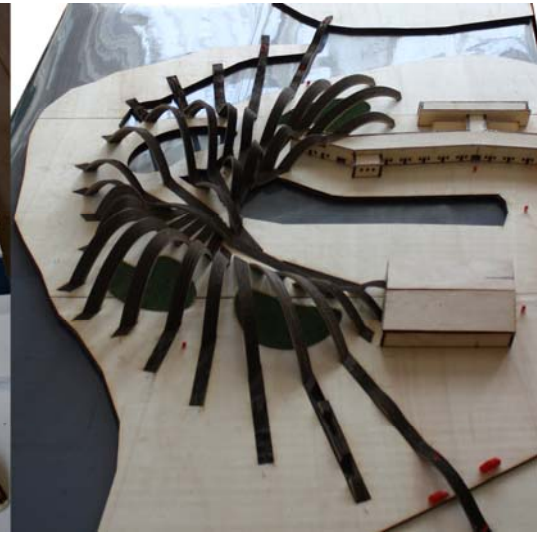




June 2010



September 2010



January 2011