

Designing Liberland: How to Build an Autonomous City

## Designing Liberland How to Build an Autonomous City

Porcupine Freedom Festival | June 25, 2021

### **Tim Brochu**

## Host of **ANARCHITECTURE** podcast Principal and Manager of **adra** ARCHITECTURE LLC

Tim Brochu



**NARCHITECTURE** podcast

Designing Liberland: How to Build an Autonomous City

# adra ARCHITECTURE LLC

**Tim Brochu, Principal and Manager ME | NH | MA Licensed Architect** Architectural design services for residential, commercial, and healthcare clients in Maine, New Hampshire, and Massachusetts.

## ANARCHITECTURE podcast

the built environment of a stateless society

anarchism architecture infrastructure urbanism economy community Exploring non-governmental approaches to the development of buildings, neighborhoods, cities, public space, infrastructure, and transportation.

Tim Brochu



### **NARCHITECTURE** podcast

Designing Liberland: How to Build an Autonomous City





### ANARCHITECTURE podcast

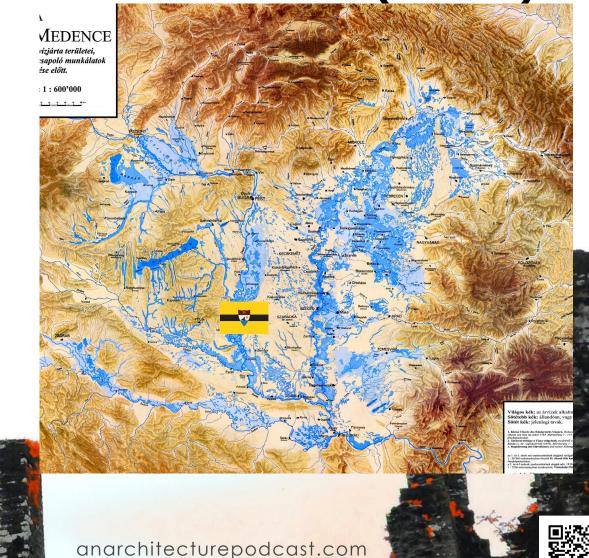
#### Designing Liberland: How to Build an Autonomous City

## HYDROLOGICAL HISTORY

Germany



### FLOOD ZONES (1800'S)



#### **ARCHITECTURE** podcast Designing Liberland: How to Build an Autonomous City **HYDROLOGICAL HISTORY**

Historic

Isar

Inn

Traun Enns

Raba

Drava

Sava

lskar

Yantra

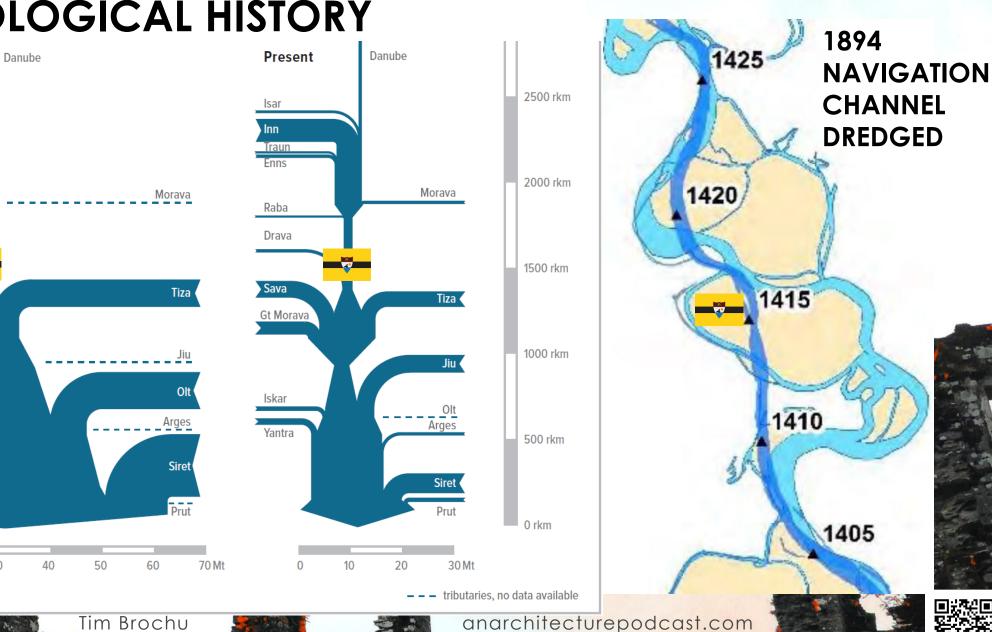
10

0

20

30

Gt Morava





Designing Liberland: How to Build an Autonomous City

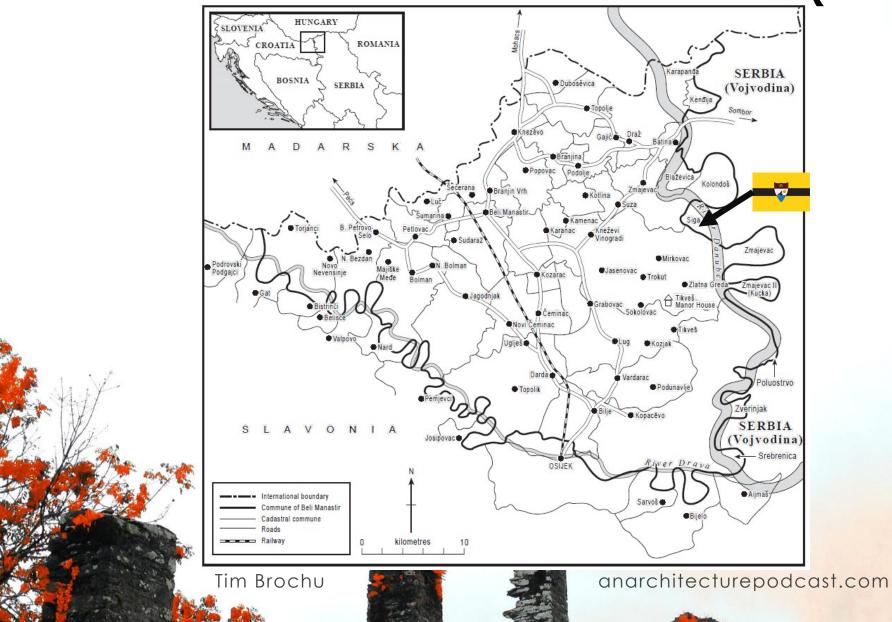
### YUGOSLAVIA PRE-1992 & POST-1992



### **NARCHITECTURE** podcast

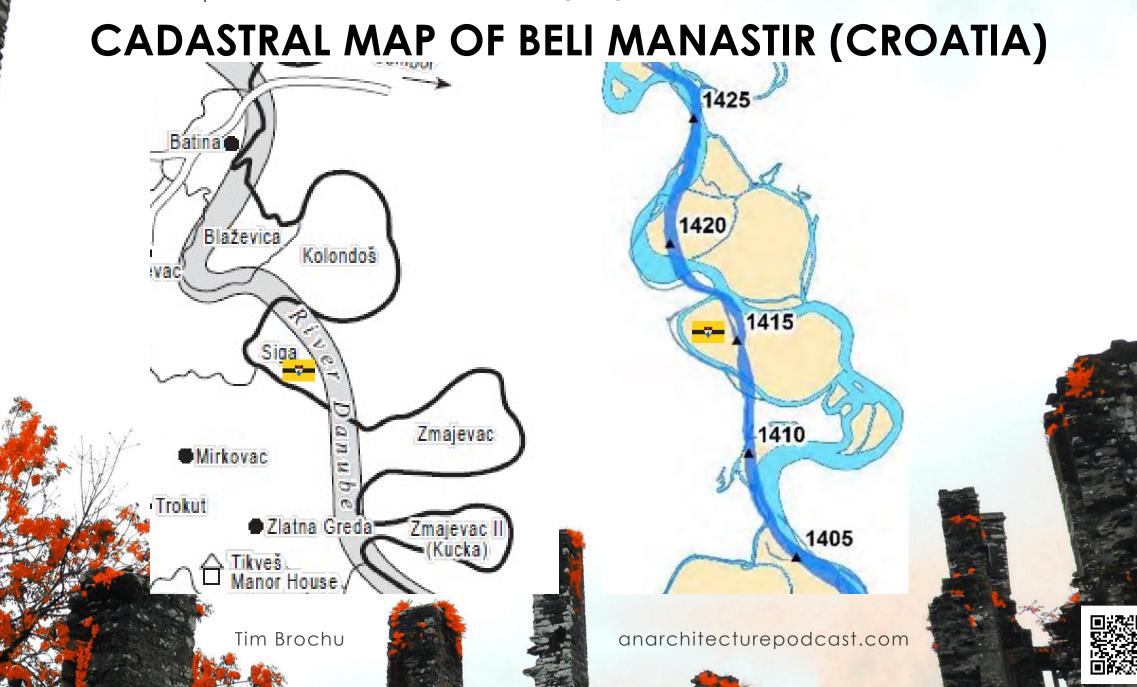
Designing Liberland: How to Build an Autonomous City

### CADASTRAL MAP OF BELI MANASTIR (CROATIA)



### **ARCHITECTURE** podcast

Designing Liberland: How to Build an Autonomous City



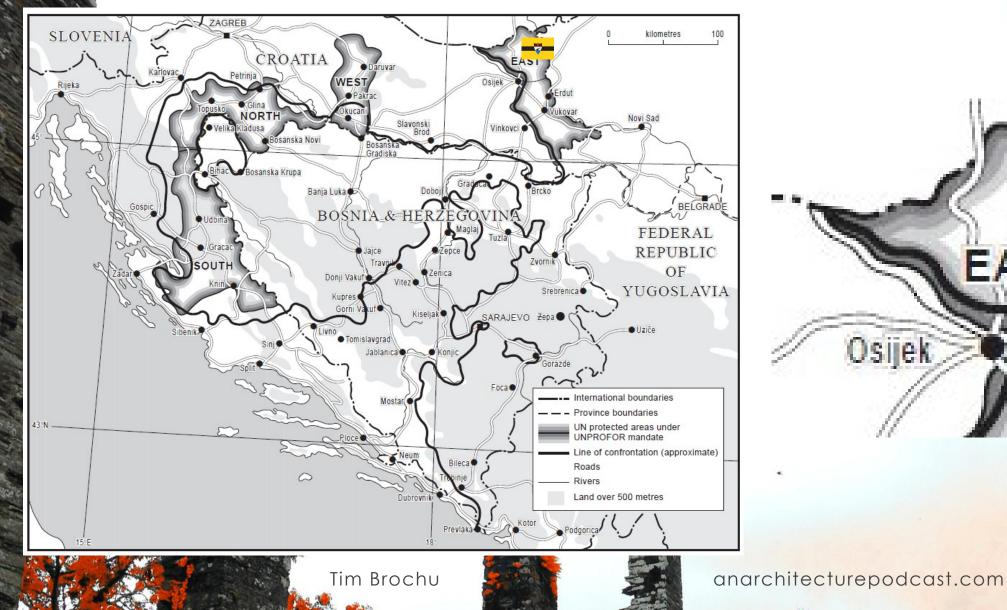
**ARCHITECTURE** podcast

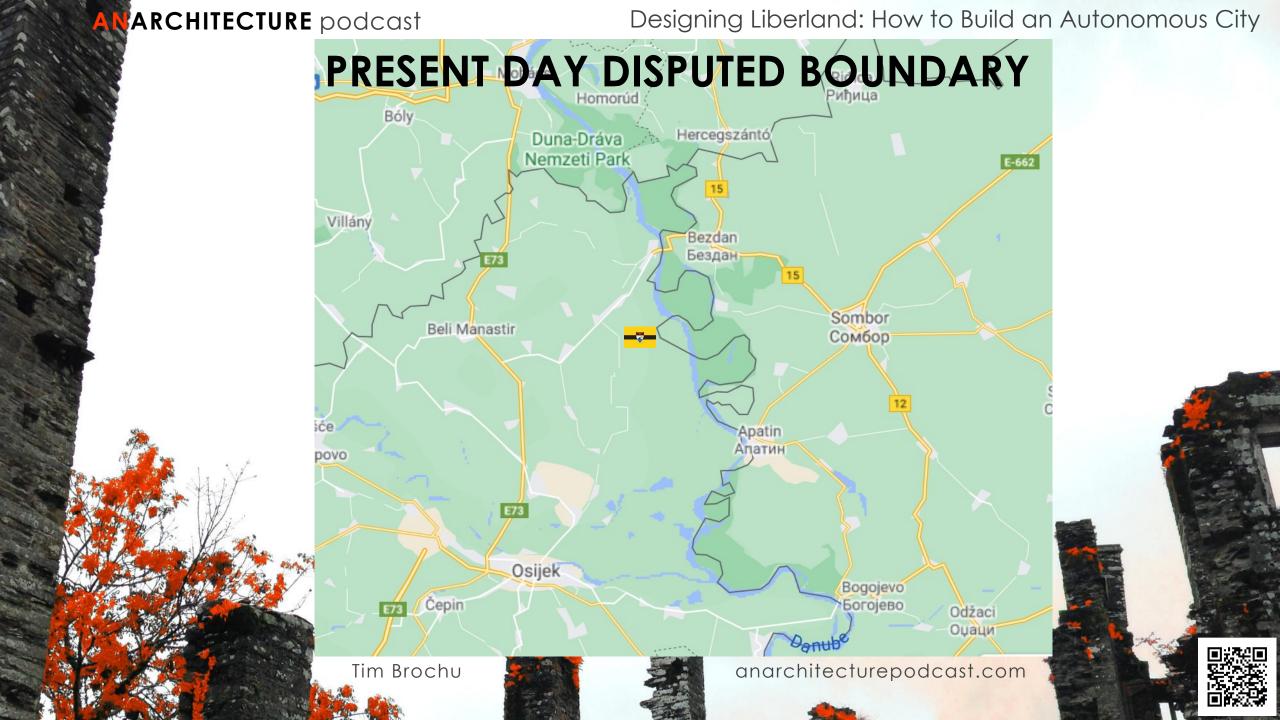
Designing Liberland: How to Build an Autonomous City

EAST

Erdut

### YUGOSLAV WARS – 1990'S







Designing Liberland: How to Build an Autonomous City

SATURDAY, MAY 16 AT 7:00AM

LIBERLAND DESIGN COMPETITION 2020

# register at design.ll.land

**GLOBAL DESIGN COMPETITION** 

instructions



Tim Brochu



#### Designing Liberland: How to Build an Autonomous City **ARCHITECTURE** podcast WINNING LIBERLAND DESIGN ENTRIES

ArchAgenda Facebook Page https://www.facebook.com/100057074725671/posts/266007961978359/?d=n

#### ArchAgenda (a)June 13 at 1:22 AM · 🕄

Congratulations to all the Winning Teams of Liberland Design Competition!!! design jurors: President Vít Liberland Jedlička, Patrik Schumacher, Jillian Godsil, Vedran Mimica, Raya Ani, Vera Kichanova, Bruno Juricic, Jan Petrš, Shady Albert Michael. Curator: Daniela Ghertovici at ArchAgenda.

> argio Bianchi ara Blanchi

aura Brunetti

ara D'ippolit:

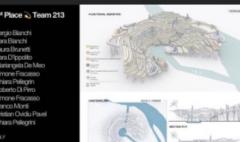
hiara Peleorin oberto Di Pirro mone Fracass

anco Monti

#### 884/828

1st Place Team 213 argio Blanch ra Brunett a D'ippoiit ianceia De M nco Monti dian Ovidu Pava

LUE & GREE





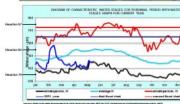


13 Shares

#### **ANARCHITECTURE** podcast

#### LIBERLAND





#### SITE + ECOLOGY



is home to 30,000 birds and 55 to endangered invests, amphibi

of under the unit of the second of the secon



Note: Theatened: I there's one thing Liberbard has piectly of, it's water. Putting this water to good as requires a water treatment plant that draws from the Danabertwer, as many as the piece of the second the forwhy do. Atternatively, wells could be drifted to the the methods in the second seco er treatment plants can be used. As it facility will be installed. This facility ca deita, and Mark line beyond

Municipal food Weener parents, see specificant week convertail hazard to the A landfill on tibertand would pose a significant week convertail hazard to the reverse of the second second part of the solitected at a transfer statio weeken or a showed to a landfill or proceeding plant is a neighboring count? er Wate Recovery Plant will produce compost and recycled

d warfs, composit can be used in to

e is initially a municipal government in Uberland, it can rent temporary offic







#### TRANSPORTATION

Liberland's small footprint is a blessing in disguise for urbanism; it is inherently walkable, and cars simply won't fit. A variety of transport modes is available for local, regional, and international transportation INTRACITY TRANSPORTATION



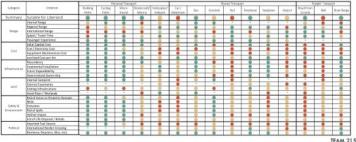


Sendole There may not be figing cars in Liberland (yet), but at best thing. ins, framport wab, and test Passenger and freight whereas at Liberland and Azatioto crossing the bank to provide direct acces

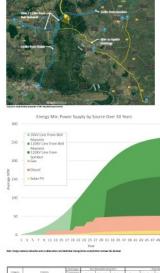
showing, and I ment route to Apatin and oth Midde Fact.

et may be used in for wed by the Section right mang lie haaten for gesch mang lie haaten for auf heid allangelak tha river in betar total demokation in betar total demokation in demokation demokation in total in total demokation in total demokatio

Sesplene Sesplenes carrying as many as 20 passengent could be the river near Uberland with about 800m of numery a disentant in the maning, working the need to pass through Serblen or Croatian border controls.



LIBERLAND



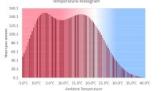
Designing Liberland: How to Build an Autonomous City





HEATING AND COOLING

- pipel till og spjølste at let hover (n. stork), som og se paraget se stork og se stork andreg at ge paraget paraget se land se stork og se stork se



ENERGY

construction to over 250MW at 120,000 people. A variety of power generation options are available, but not all of them are suitable for Liberland. The limited land area, especially considering the flood risk, makes large power stations impractical. Grid connections from Croatia and Serbia will provide stable and flexible power. This can be supplemented by some local gas and solar power generation. Other technologies, like wind and ydroelectric, are ruled out by the lack of appropriate environmental conditions. they can, since the power station is named' witable. The Palu n of power generators reduces the risk of any one nation cord to Libertand for political whites. The risk of deception towever, political risks and into Rich line runs from theil Manach to Ageth, crossing the Danub Solar Platovalak Generalis outh of Liberland. A Skin line as show a power needs in the early stages. c of 1.400 Mill, an mecessary for the earliest stages of ower is connected. Diesel will have a k on the tailer i Tole as backet one group power for excention territors, final generators can be installed in buildings and shad for each building's needs. Large safe base load disud generation is not writelike due to find cost. shaded by larger ones, which reduces the walde not panels on 21% of the designed roof area, 20MM per care the could be installed.

Liberland's power demand is projected to increase from less than 1MW during initial

Niled water using a refigeration ambient air. While these are



TEAM 215



**TEAM 215** 





**NARCHITECTURE** podcast

Designing Liberland: How to Build an Autonomous City

### ANARCHITECTURE DESIGN TEAM

Tim Brochu Joe Brochu

Goshe King

Joe Green

CarCamplt

Architect Engineer (Power Systems) Anarchitecture Podcast Anarchitecture Podcast

Mechanical/ HVAC Engineer Angineering Tech Podcast Mechanical/ HVAC Engineer Angineering Tech Podcast

**Civil Engineer** 

Timeline Earth (The Podcast Formerly Known as Friends Against Government)

John Ellis

Architect

Palmer & Ryan

Andy Boenau

Mat Slaughter

Architects

Engineer

Tim Brochu

Urbanism / Transportation

**Problematic Podcast** 

Urbanism Speakeasy, How We Get Around

## ARCHITECTURE podcast Designing Liberland: How to Build an Autonomous City Why hasn't Liberland been developed?

Tim Brochu







# ARCHITECTURE podcast Designing Liberland: How to Build an Autonomous City Why hasn't Liberland been developed? WETLANDS



## ARCHITECTURE podcastDesigning Liberland: How to Build an Autonomous CityWhy hasn't Liberland been developed?FLOODING

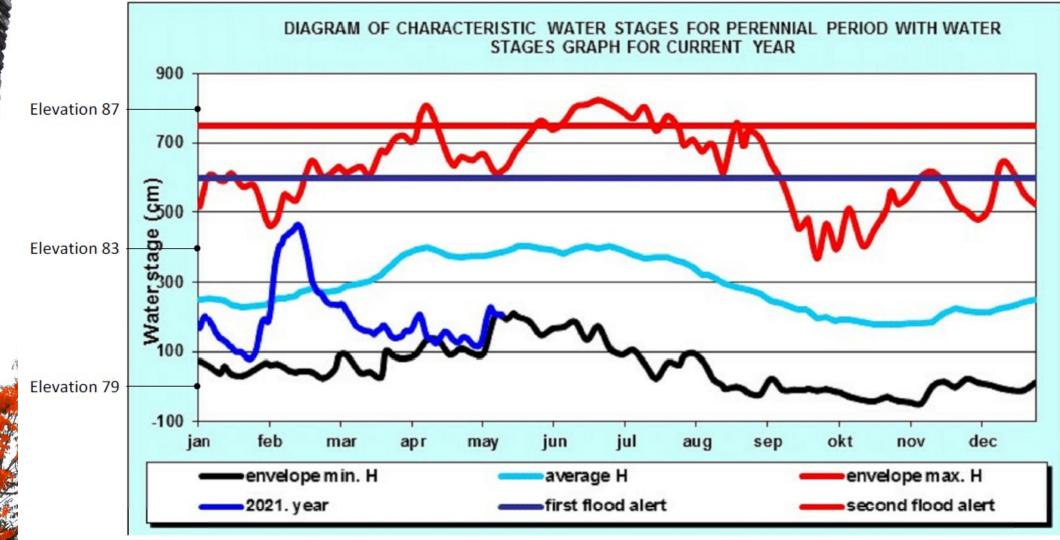
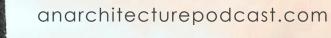
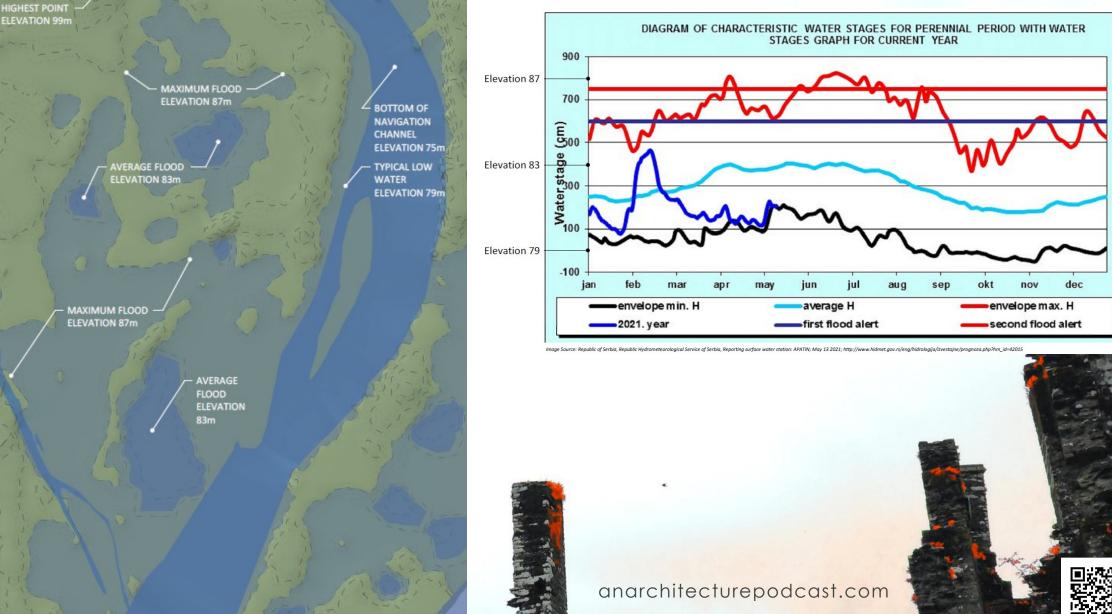


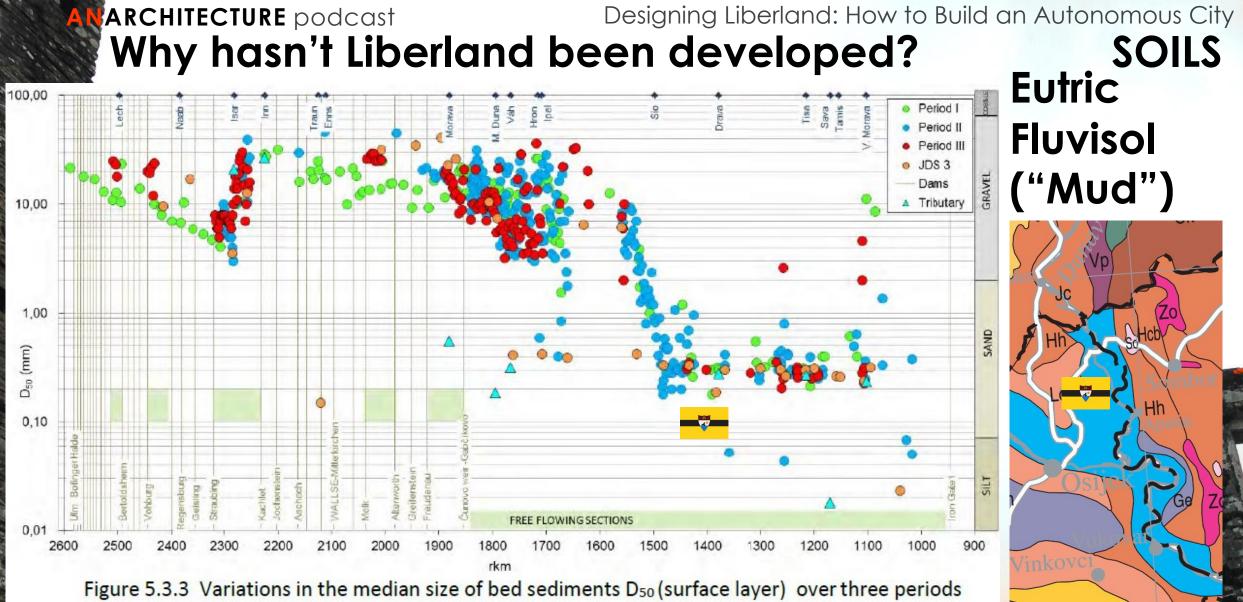
Image Source: Republic of Serbia, Republic Hydrometeorological Service of Serbia, Reporting surface water station: APATIN; May 13 2021; http://www.hidmet.gov.rs/eng/hidrologija/izvestajne/prognoza.php?hm\_id=42015





### Designing Liberland: How to Build an Autonomous City **FLOODING**





(I, II and III) along the Danube River between rkm 2,600 and rkm 1,000

Tim Brochu





# ARCHITECTURE podcast Designing Liberland: How to Build an Autonomous City Why hasn't Liberland been developed?

Tim Brochu





ARCHITECTURE podcast Designing Liberland: How to Build an Autonomous City Why hasn't Liberland been developed?

## **BECAUSE LIBERLAND IS NOT DEVELOPABLE LAND**





# ARCHITECTURE podcast Designing Liberland: How to Build an Autonomous City Why hasn't Liberland been developed?



Tim Brochu



anarchitecturepodcast.com



Rendering of András Győrfi's "The Swimming City" Original uploader was JackDayton at en.wikipedia -Transferred from en.wikipedia (Andras Gyorfi, TSI, <u>http://seasteading.org/designcontest-winners</u>, this image is CCA)



ARCHITECTURE podcast Designing Liberland: How to Build an Autonomous City

### **OPPORTUNITIES FOR AUTONOMY**

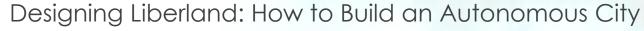
- International waterway
- Infrastructure redundancy
- Investment in depressed region
- Environmental stewardship
- International multi-cultural society

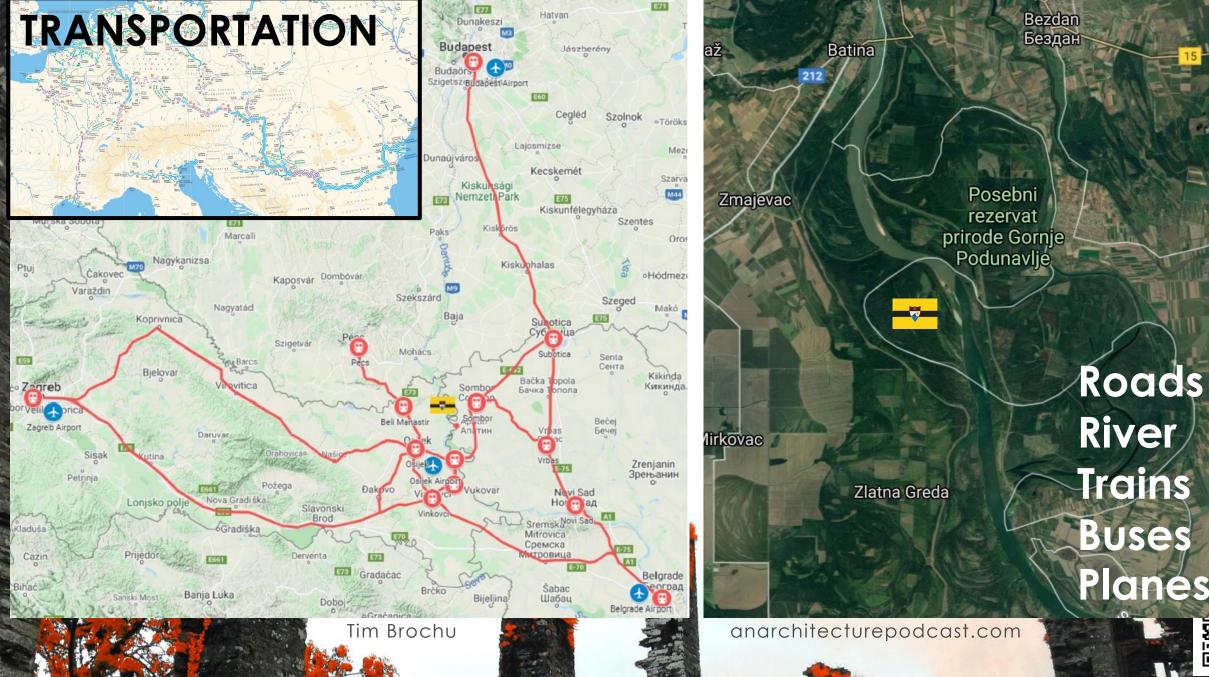
Tim Brochu

• Win-win solutions









### **ARCHITECTURE** podcast

## TRANSPORTATION





Tim Brochu

### Designing Liberland: How to Build an Autonomous City



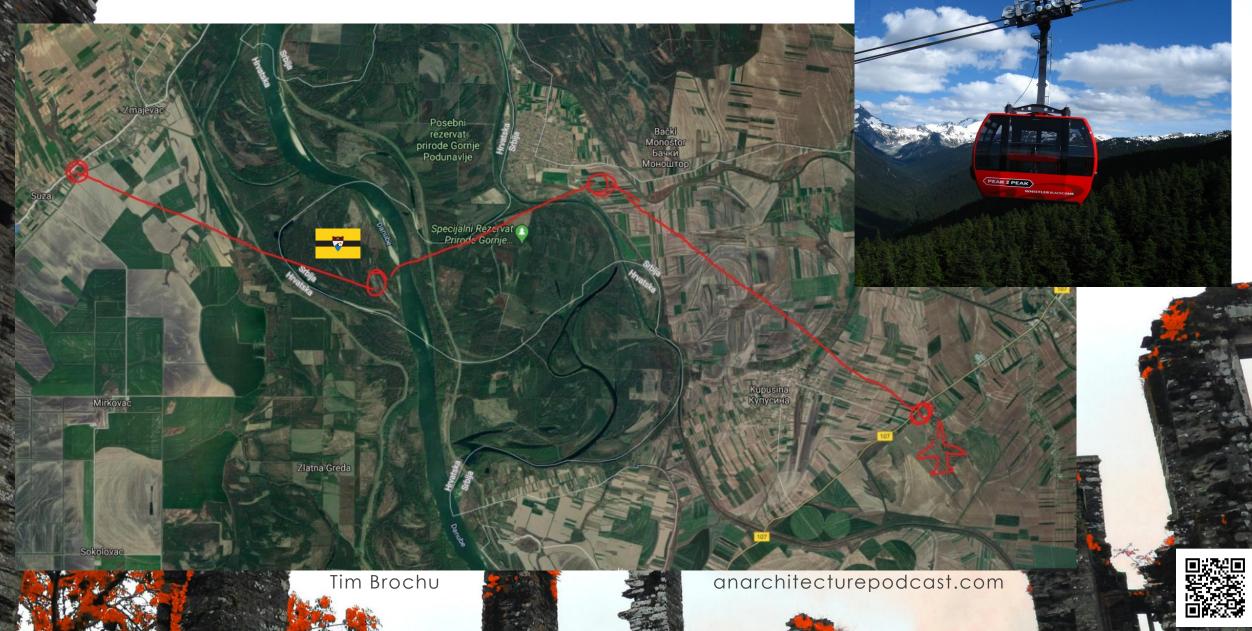




### **NARCHITECTURE** podcast

Designing Liberland: How to Build an Autonomous City

### **GONDOLA – INTERNATIONAL TRAVEL?**



### **ARCHITECTURE** podcast

A Rote of

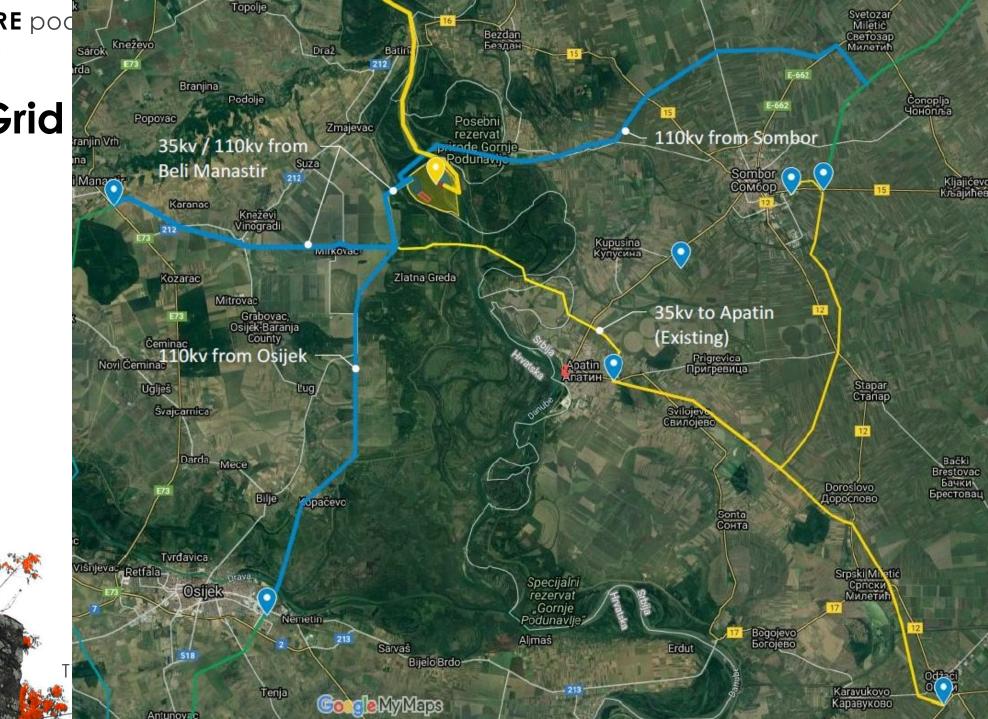
10.00

Designing Liberland: How to Build an Autonomous City

## ENERGY – SELF-SUFFICIENCY OR REDUNDANCY?

		Grid Import	Non-F	Renewable Gener	ration		Rer	newable Genera	tion		Storage
Category	Criterion	Transmission Lines	Diesel	Natural Gas	Nuclear	Biogas	Solar Panels	Wind Turbine	Hydroelectric	Geothermal	Battery (BESS)
Summary	Suitable for Liberland										
	Capacity (MW)										
	Annual Generation (MWh/year)										
	Reliable Base Load / Intermittency										0
Capacity	Flexible Peaking / Variable Loads										
	Short term / Temporary Power										
	Emergency Backup Power										
	Combined Heat & Power Cogeneration										
	Redundancy										
	Incremental Installation	•									
Infrastructure	Future Expandability										
	Equipment Lifespan										
	Decentralized										
	Initial Capital Cost										
Cost	Fuel / Import Tariff Cost										
COSL	Equipment Maintenance Cost										
	Levelized Cost of Energy (\$/MWh)										
Land	Internal Footprint										
Lanu	External Easements										
	Avoid River / Wetlands										
Safety &	Noise										
Environment	Emissions										
Environment	Risk of Spills										
	End of Life Disposal / Rehabilitation										
	External Generation										
Political	Imported Fuel Source										
Folitical	International Regulations										
	Resiliency (Natural Disasters, War, etc)										

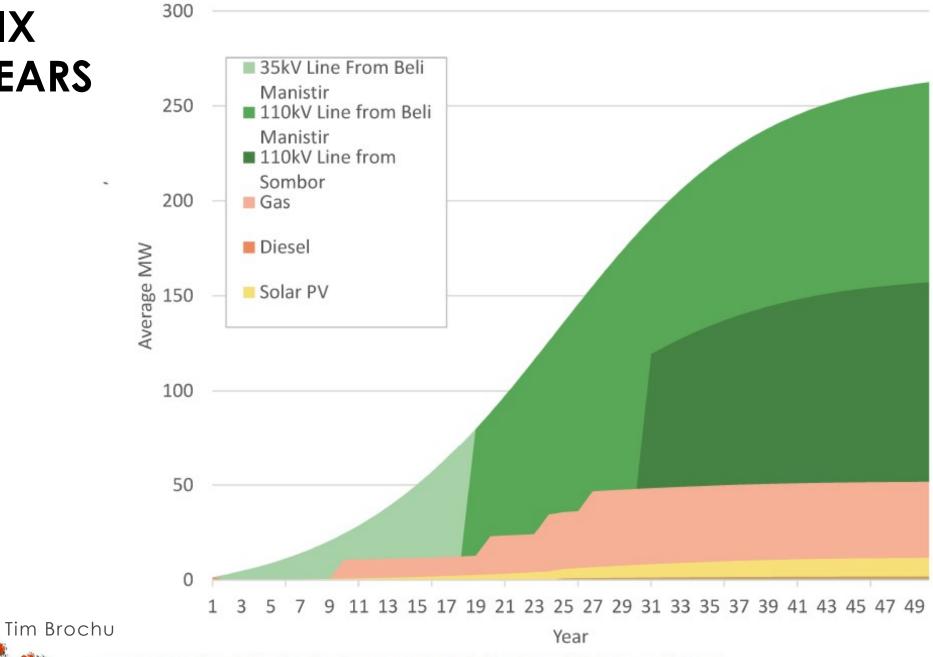
### ARCHITECTURE pod ENERGY Power Grid



**ARCHITECTURE** podcast

### ENERGY MIX OVER 50 YEARS

Energy Mix: Power Supply by Source Over 50 Years



Note: Energy intensive industries such as datacenters and blockchain mining farms would further increase this demand.

#### 

160.1

140.1

Designing Liberland: How to Build an Autonomous City

### **ENERGY – HEATING AND COOLING**

120.1 E											
100.1				Heating			Cooling Combined Heating/				
80.1 40.1 20.1 -5.0°C 0.0°C 5.0°C	10.0°C 15.0°C 20.0°C 25.0°C 30.0°C 35.0°C 40.0°C Ambient Temperature	Diesel / Fuel Oil	Natural Gas	Central Heating Plant (Gas)	Biogas Cogeneration	Natural Gas Cogeneration	Natural Ventilation	River Water Cooling	Electric Heat Pumps / Air Conditioning	Geothermal Ground Loops	
Summary	Suitable for Liberland			0							
Conceitu	Capacity (MW)										
L anacity L	Annual Production (MWh/year)										
	Redundancy										
. ,	Incremental Installation										
Infrastructure	Future Expandability										
	Equipment Lifespan										
	Decentralized										
	Initial Capital Cost										
	Fuel / Import Tariff Cost										
CUSE	Equipment Maintenance Cost										
	Levelized Cost of Energy (\$/MWh)										
Land	Internal Footprint										
Land	External Easements										
	Avoid River / Wetlands										
	Renewable Energy Source										
Safety &	Noise										
Environment	Emissions										
	Risk of Spills										
	End of Life Disposal / Rehab						•				
	Imported Fuel Source										
Political	International Regulations										
	Resiliency (Disasters, War, etc)										

ARCHITECTURE podcast Designing Liberland: How to Build an Autonomous City

## WATER AND WASTEWATER

### WATER – River or Underground Aquifer

### WASTEWATER – Enhanced treatment before returning to river

Trident<sup>®</sup> HS Package Water Treatment Plant



# NARCHITECTURE podcas

ELEVATION 87n

AVERAGE FLOOD ELEVATION

VERAGE FLOOD

MAXIMUM FLOC ELEVATION 87m BOTTOM OF NAVIGATION CHANNEL

WATER ELEVATION 79m

Tim Bro

1 361

HIGHEST POINT -ELEVATION 99m

> - MAXIMUM FLOOD -ELEVATION 87m

> > AMEDACE

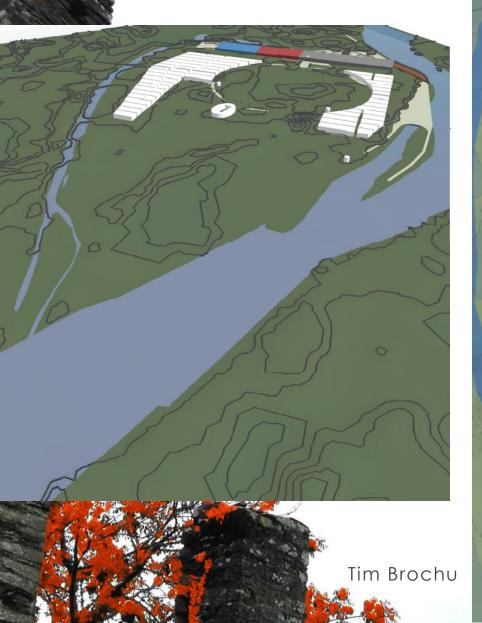
- AVERAGE FLOOD -ELEVATION 83m

MAXIMUM FLOOD -ELEVATION 87m BOTTOM OF NAVIGATION CHANNEL ELEVATION 75m

- TYPICAL LOW WATER ELEVATION 79n

ELEVATION 87

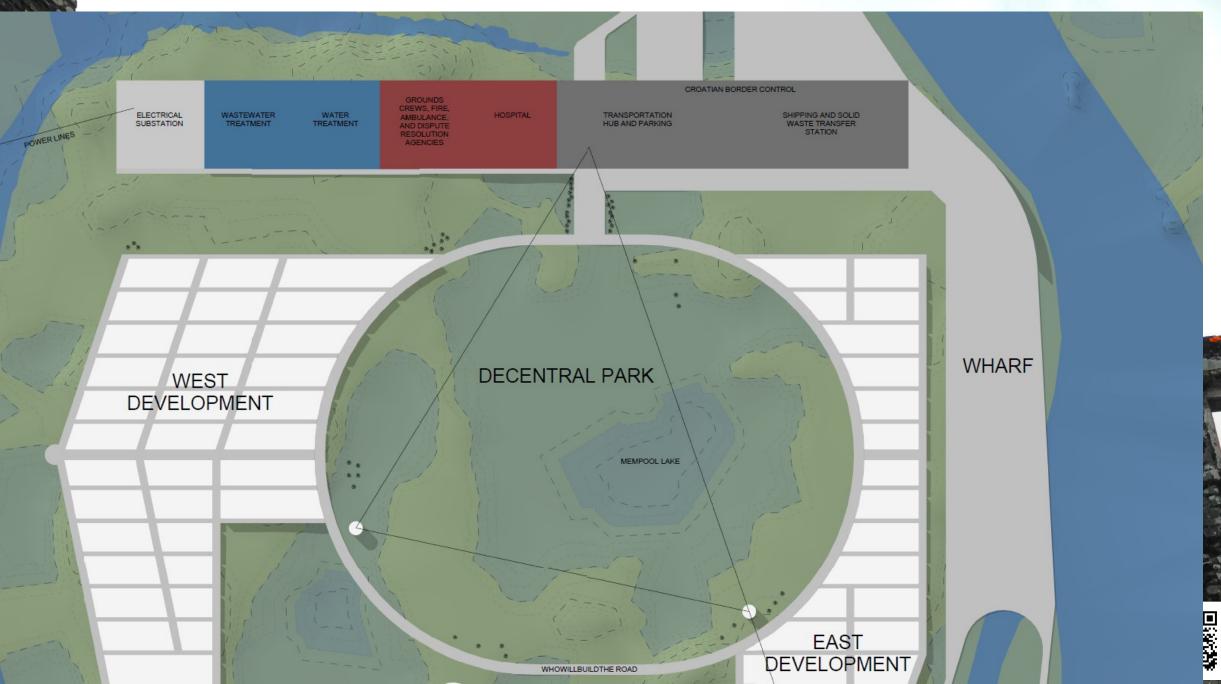
# **OUR DESIGN**





### **NARCHITECTURE** podcast

### Designing Liberland: How to Build an Autonomous City



### ARCHITECTURE podcast DEVELOPMENT INCENTIVE D.A.O.'S

Blockchain-based Decentralized Autonomous Organizations to incentivize development priorities instead of rigid zoning

- Density
- Open Space
- Environmental
   Mitigation

Tim Brochu

LECTRICAL WHARF **DECENTRAL PARK** WEST DEVELOPMENT EAST DEVELOPMENT ACCOUNT OF A DOMESTIC OF MARINA NATURE PRESERVE GONDOL

#### **VARCHITECTURE** podcast

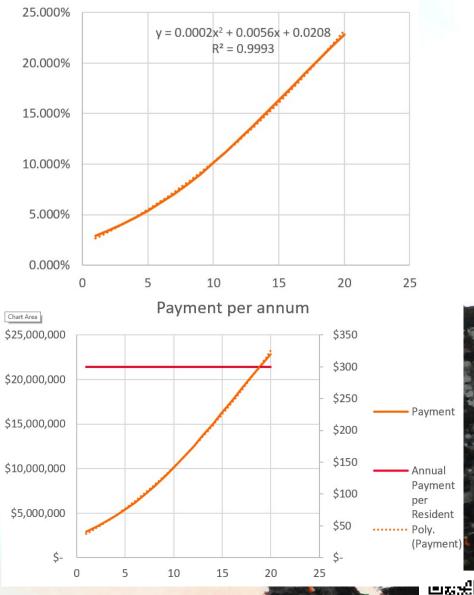
### Designing Liberland: How to Build an Autonomous City

#### Interest Rate

### **INFRASTRUCTURE D.A.O.** Interest rate increases as population increases Users pay a fixed monthly rate

			230,845,383	\$	Final Amount	100,000,000	Initial Amount
	\$ 3,032		\$	Per Capita	1,313	Per final Capita	
			130,845,383	\$	Loan Profit	300	al payment per resident
			131%		Profit %	6.8%	IRR
						13	Payback Years
Cumulative Payment		Rate	ment	r Pa	Annual Paymer	opulation Serv	oan Year
			100,000,000	-\$			0
\$ 2,893,733	2.894%	2.89	2,893,733	\$	\$ 300	9,646	1
6,317,923	3.424%	3.42	3,424,190	\$	\$ 300	11,414	2
\$ \$ 10,333,495	4.016%	4.01	4,015,571	\$	\$ 300	13,385	3
\$ \$ 15,005,389	4.672%	4.67	4,671,895	\$	\$ 300	15,573	4
\$ \$ 20,402,030	5.397%	5.39	5,396,640	\$	\$ 300	17,989	5
\$ \$ 26,594,544	5.193%	6.19	6,192,514	\$	\$ 300	20,642	6
\$ \$ 33,655,734	7.061%	7.06	7,061,190	\$	\$ 300	23,537	7
\$ \$ 41,658,782	8.003%	8.00	8,003,048	\$	\$ 300	26,677	8
\$ \$ 50,675,706	9.017%	9.01	9,016,923	\$	\$ 300	30,056	9
\$ \$ 60,775,600	0.100%	10.10	10,099,894	\$	\$ 300	33,666	10
\$ 72,022,734	1.247%	11.24	11,247,134	\$	\$ 300	37,490	11
\$ \$ 84,474,581	2.452%	12.45	12,451,847	\$	\$ 300	41,506	12
\$ 98,179,903	3.705%	13.70	13,705,323	\$	\$ 300	45,684	13
\$ \$ 113,177,009	4.997%	14.99	14,997,106	\$	\$ 300	49,990	14
\$ \$ 129,492,305	5.315%	16.31	16,315,296	\$	\$ 300	54,384	15
\$ \$ 147,139,267	7.647%	17.64	17,646,961	\$	\$ 300	58,823	16
\$ \$ 166,117,892	8.979%	18.97	18,978,626	\$	\$ 300	63,262	17
\$ \$ 186,414,709	0.297%	20.29	20,296,816	\$	\$ 300	67,656	18
\$ 208,003,308	1.589%	21.58	21,588,599	\$	\$ 300	71,962	19
\$ 230,845,383	2.842%	22.84	22,842,075	\$	\$ 300	76,140	20

Tim Brochu



### **ARCHITECTURE** podcast NAPREDAK

- Land parcel in Apatin, Serbia currently owned by Liberland
- Site of Floating Man **Festival**
- Ideal port for shipping and transportation to and from Liberland 10km downriver

Tim Brochu

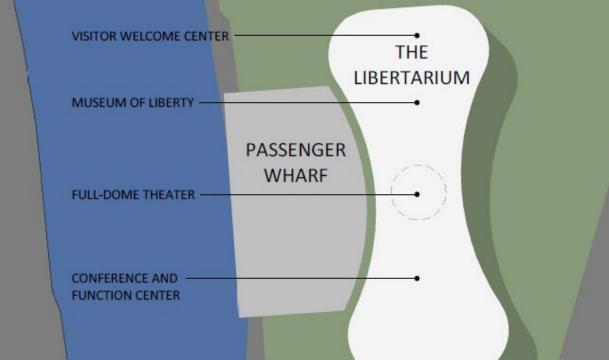
### Designing Liberland: How to Build an Autonomous City





# ARCHITECTURE podcast





## THE LIBERTARIUM

FREIGHT WHARF **WARCHITECTURE** podcast

Designing Liberland: How to Build an Autonomous City

## ANARCHITECTURE podcast

the built environment of a stateless society

anarchism architecture infrastructure urbanism economy community Exploring non-governmental approaches to the development of buildings, neighborhoods, cities, public space, infrastructure, and transportation.

# adra ARCHITECTURE LLC

**Tim Brochu, Principal and Manager ME | NH | MA Licensed Architect** Architectural design services for residential, commercial, and healthcare clients in Maine, New Hampshire, and Massachusetts.

Tim Brochu



#### Designing Liberland: How to Build an Autonomous City **ARCHITECTURE** podcast WINNING LIBERLAND DESIGN ENTRIES

ArchAgenda Facebook Page https://www.facebook.com/100057074725671/posts/266007961978359/?d=n

#### ArchAgenda (a)June 13 at 1:22 AM · 🕄

Congratulations to all the Winning Teams of Liberland Design Competition!!! design jurors: President Vít Liberland Jedlička, Patrik Schumacher, Jillian Godsil, Vedran Mimica, Raya Ani, Vera Kichanova, Bruno Juricic, Jan Petrš, Shady Albert Michael. Curator: Daniela Ghertovici at ArchAgenda.

Place Team 213

argio Bianchi ara Blanchi

aura Brunetti

ara D'ippolit:

hiara Peleorin oberto Di Pirro mone Fracass

anco Monti

stian Ovidia Pausi

#### 884/828

1st Place Team 213 argio Blanch ra Brunett a D'ippoiit ianceia De M nco Monti dian Ovidu Pava

LUE & GREE











13 Shares