



Prof. Dr.-Ing. Martin Prominski, Leibniz Universität Hannover
Wasserorientierte Stadtgestaltung für
Menschen und Gewässer



Wie können in urbanen Flussräumen die Ziele Hochwasserschutz UND Ökologie UND Freiraumnutzung verknüpft werden?

Wie kann MIT den Wasserprozessen gestaltet werden?

Prozessorientierte Gestaltung urbaner Fließgewässerräume

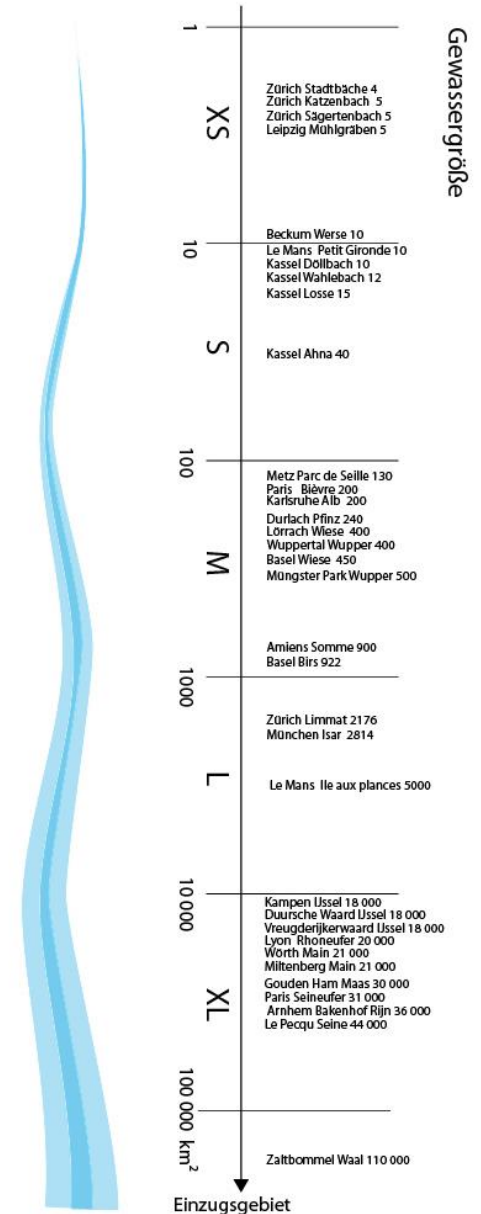
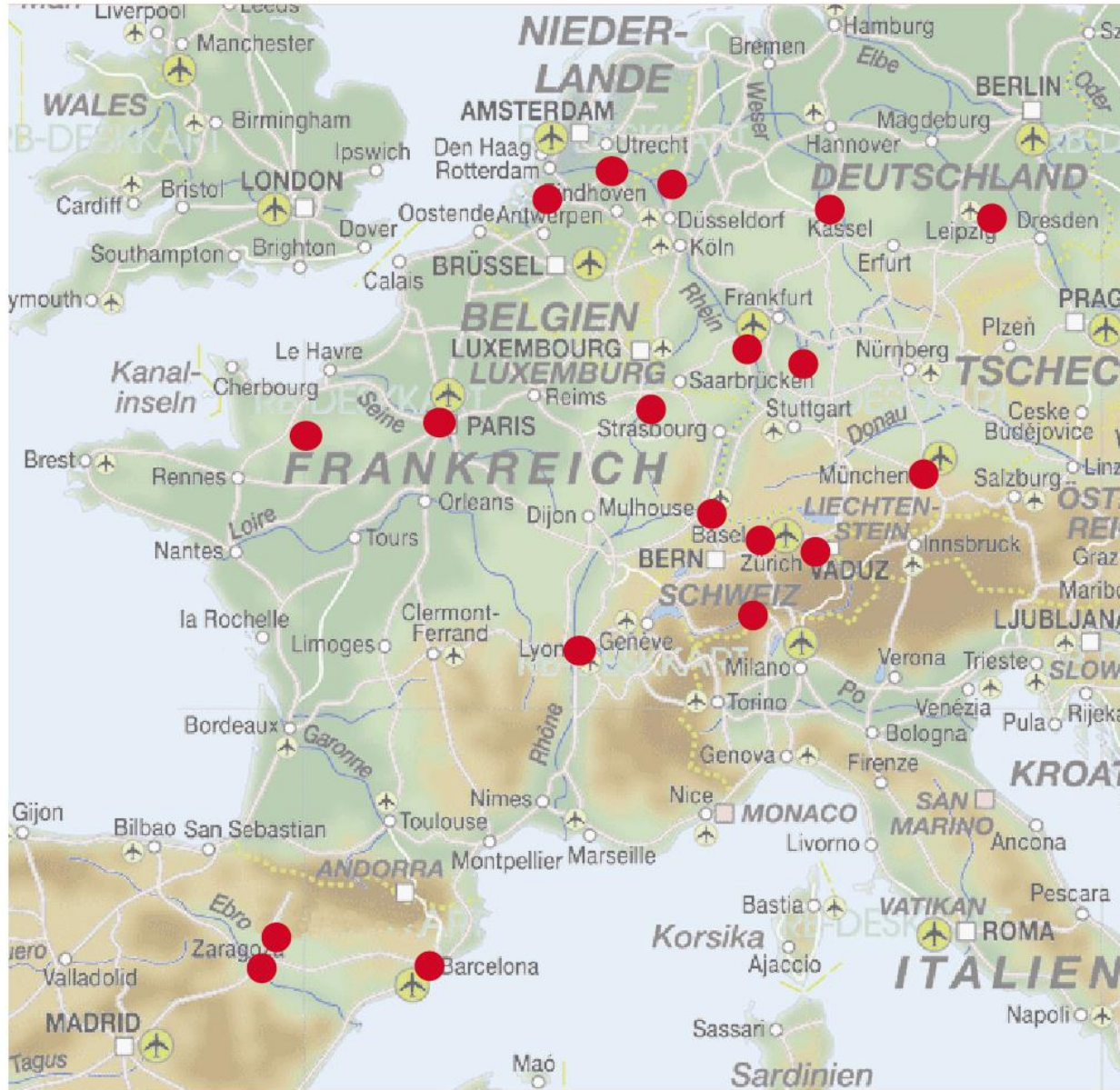
Förderung: Deutschen Forschungsgemeinschaft (DFG)

September 2008 – September 2011

Projektleitung: Martin Prominski/ Antje Stokman



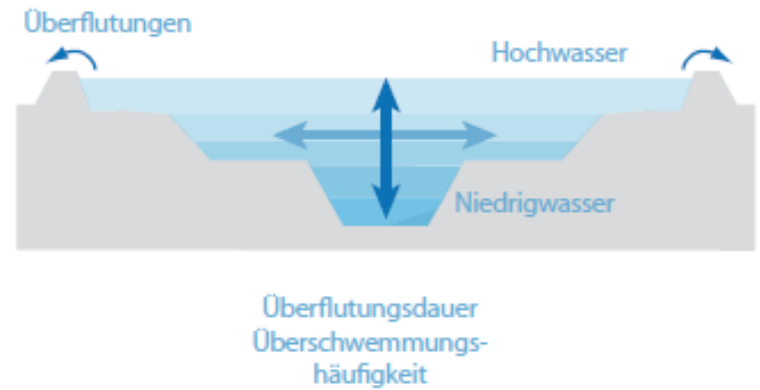
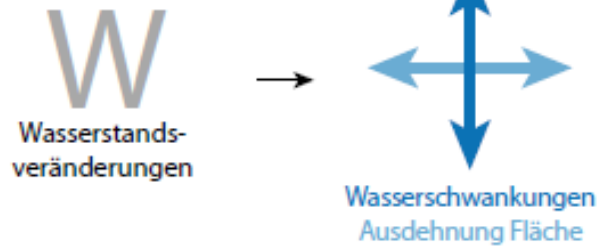
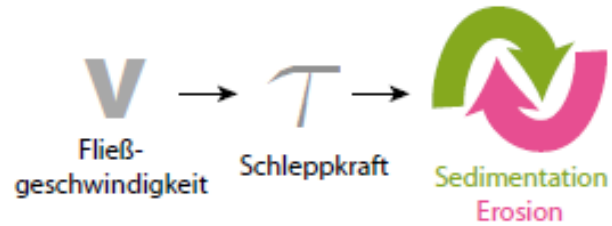
Fallbeispiele



50 ausgewählte Projekte wurden besucht und analysiert

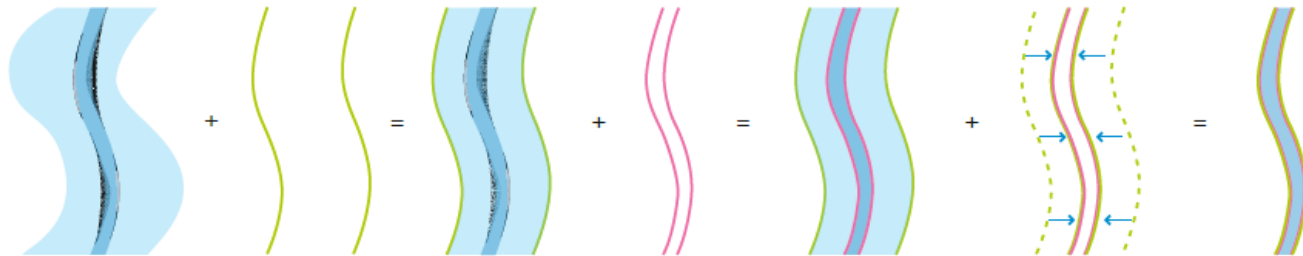
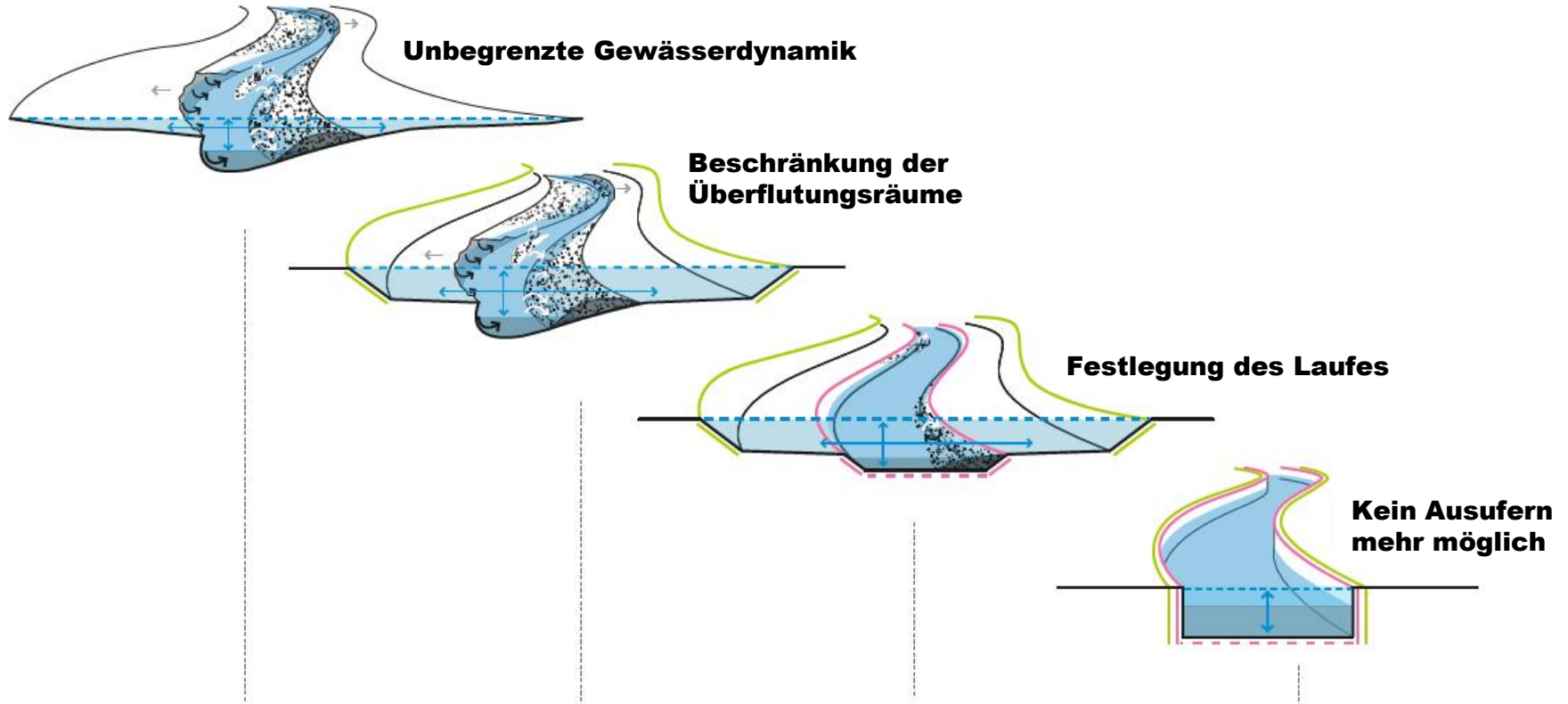
Wasserprozesse

Morphodynamik



Wasserschwankung

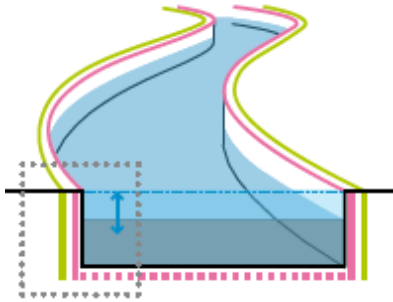
Grenzräume in Flusslandschaften



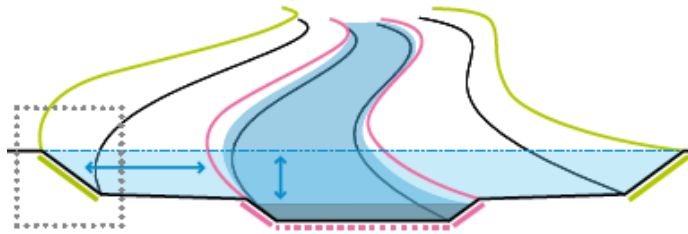
Natürliche Grenze Überflutungsgrenze Grenze der Laufentwicklung Überlagerung der Grenzen

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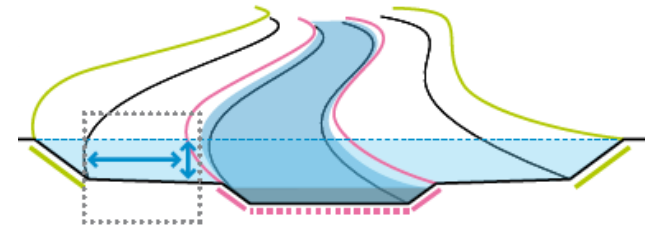
A Ufermauern und Promenaden



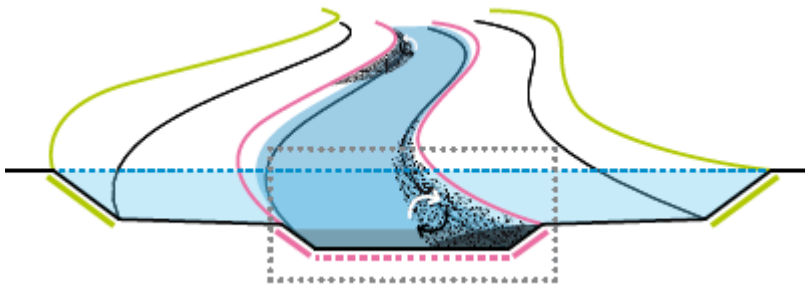
B Deiche und Flutwände



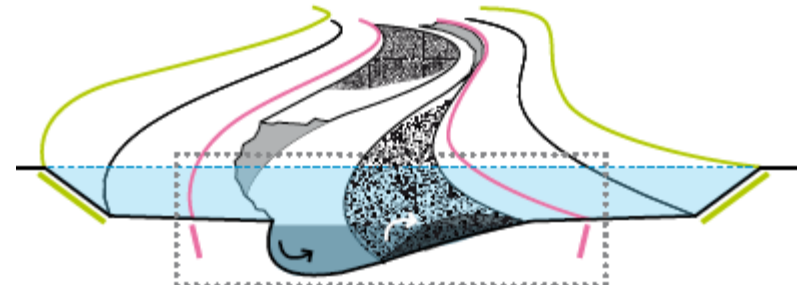
C Überflutungsflächen



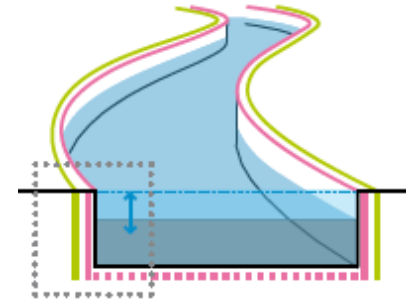
D Flussbette und Fließräume



E Dynamisierte Flusslandschaften



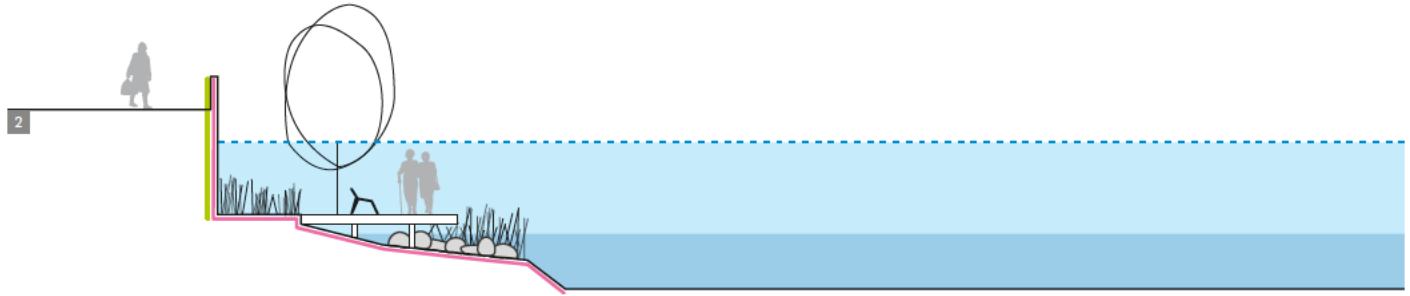
Prozessraum A – Ufermauern und Promenaden



Seine, Choisy-le-Roi/ Paris



Seine, Choisy-le-Roi/ Paris



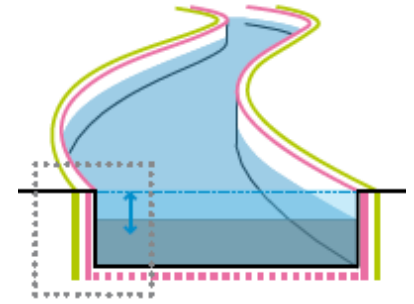
Seine, Choisy-le-Roi/ Paris



Seine, Choisy-le-Roi/ Paris



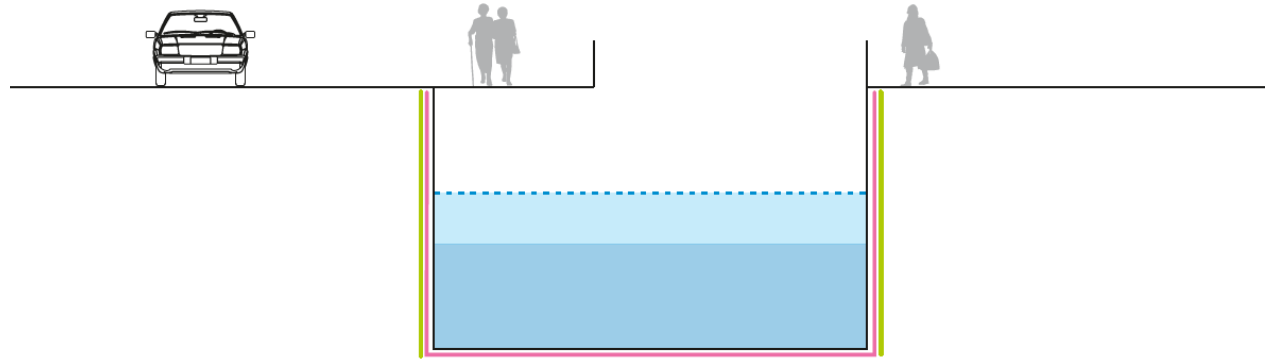
Prozessraum A – Ufermauern und Promenaden



Elster- und Pleißemühlgraben, Leipzig

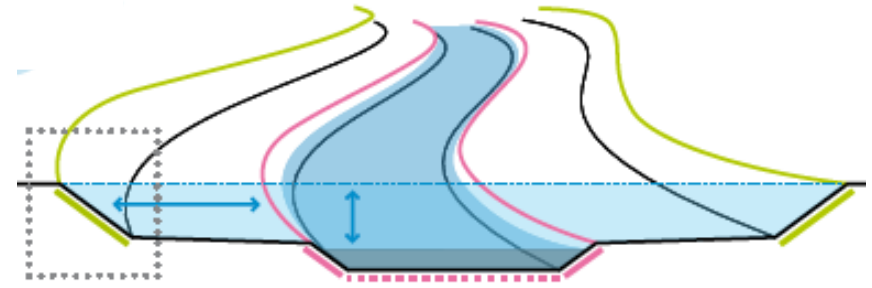


Elster- und Pleißemühlgraben, Leipzig



Elster- und PleiBemühlgraben, Leipzig

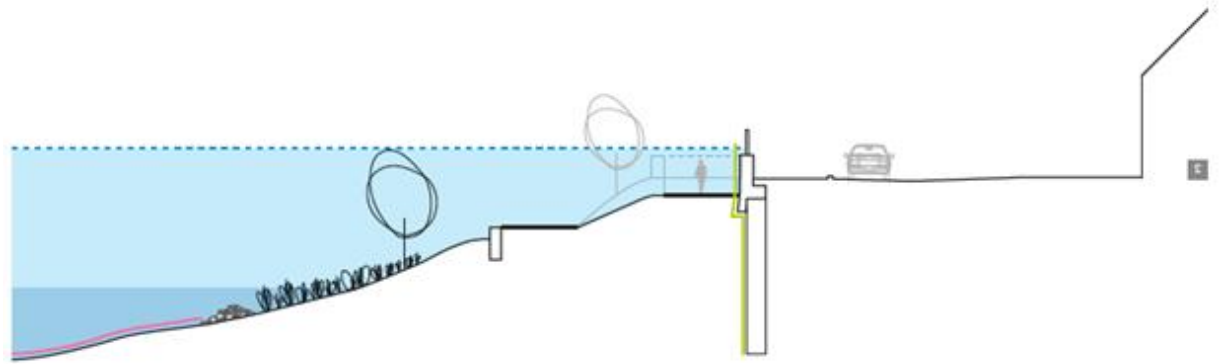
Prozessraum B – Deiche und Flutwände



Regen, Regensburg



Regen, Regensburg



Regen, Regensburg



Regen, Regensburg

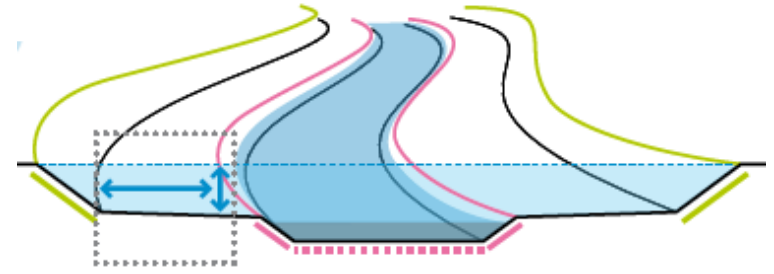


Regen, Regensburg



Regen, Regensburg

Prozessraum C – Überflutungsflächen



Yiwu und Wuyi Flüsse (Yanweizhou Park), Jinhua

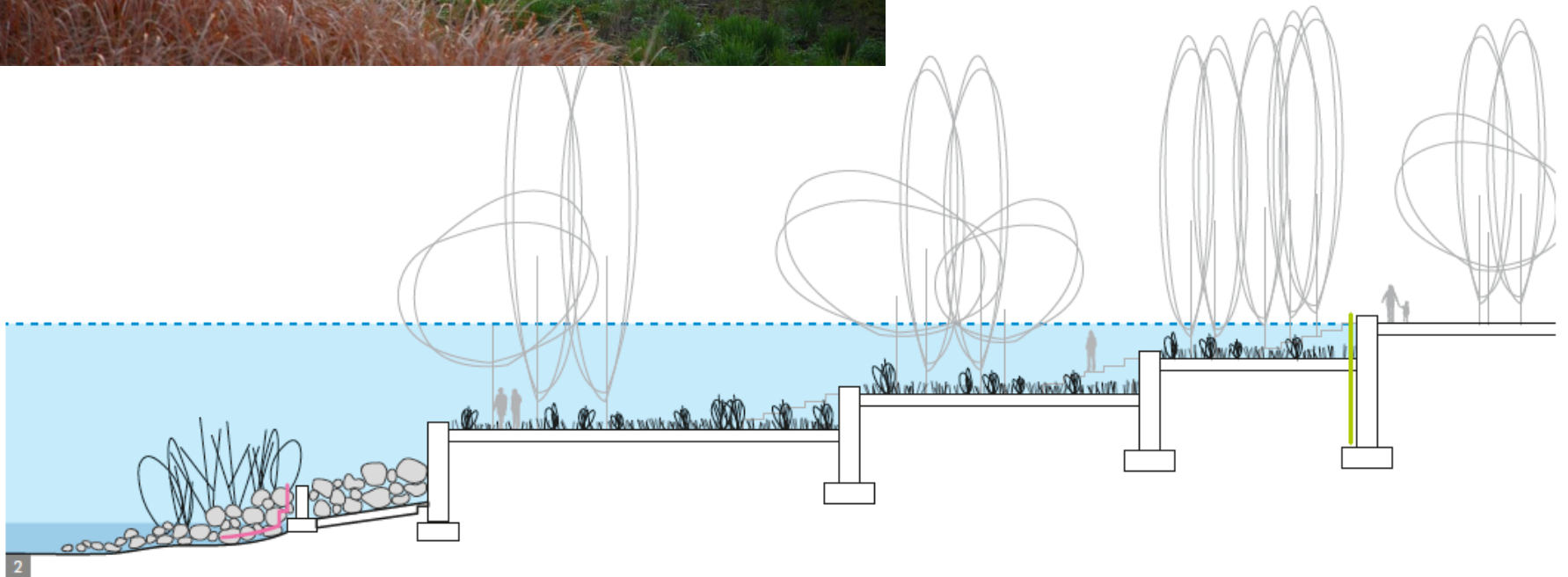


Yiwu und Wuyi Flüsse (Yanweizhou Park), Jinhua



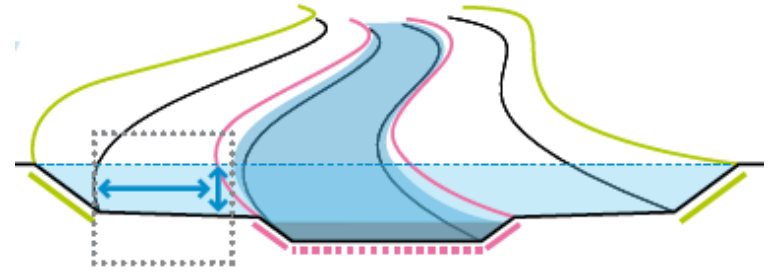


Yiwu und Wuyi Flüsse (Yanweizhou Park), Jinhua



Yiwu und Wuyi Flüsse (Yanweizhou Park), Jinhua

Prozessraum C – Überflutungsflächen



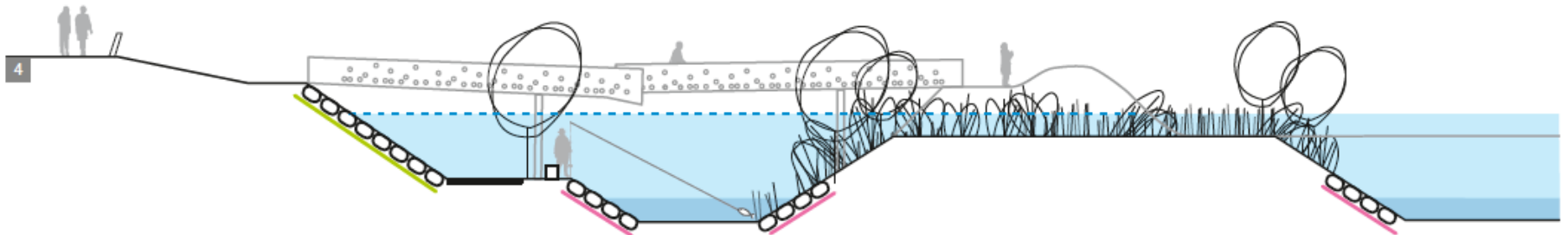
Gallego (Parque Fluvial), Zuera



PERFILES DEL PARQUE:



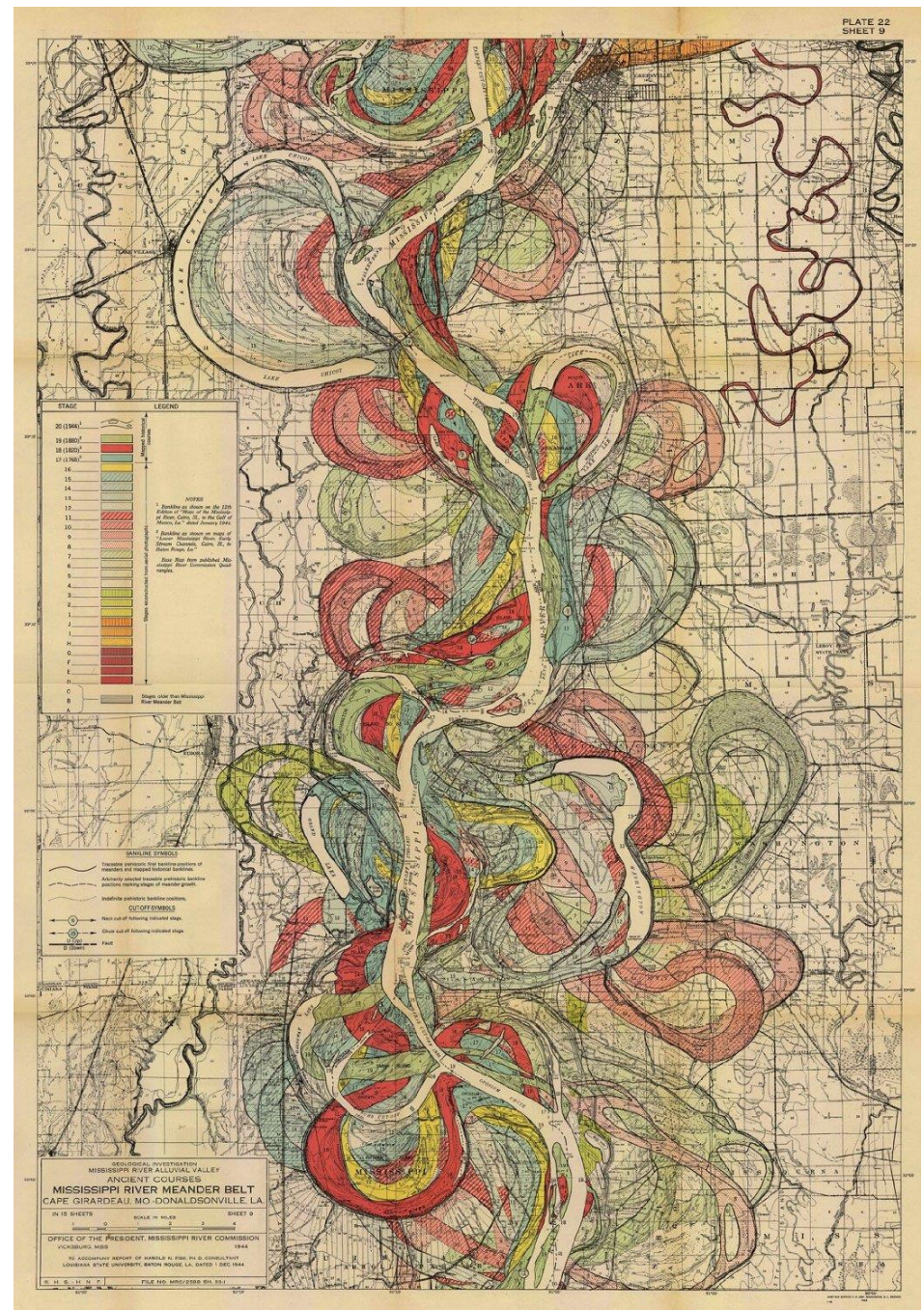
Gallego (Parque Fluvial), Zuera



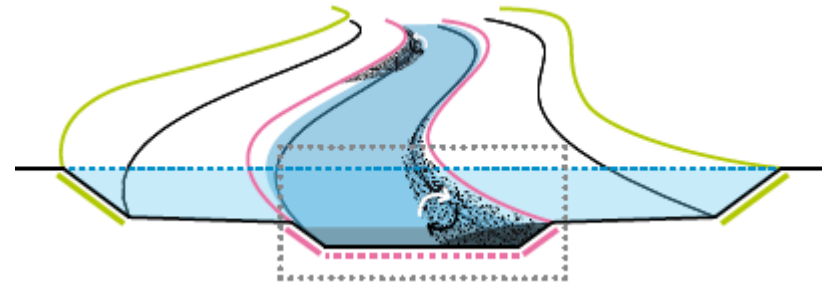
Gallego (Parque Fluvial), Zuera

Morphodynamische Prozesse

Karte der historischen Flussverläufe des Mississippi River Valley von Harold Fisk, 1944



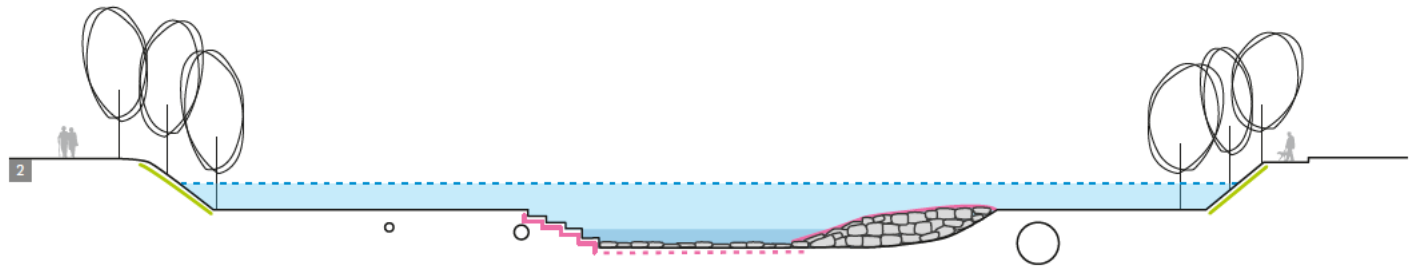
Prozessraum D – Flussbette und Fließräume



Birs, Basel

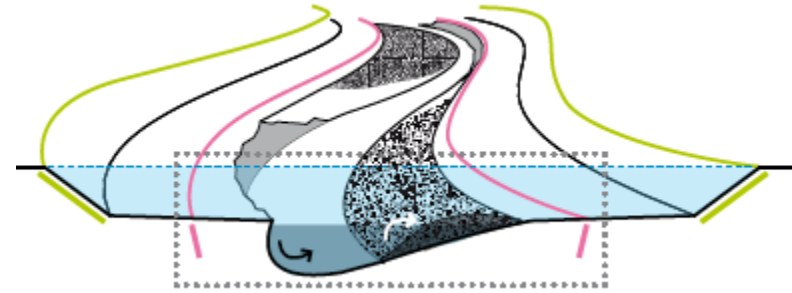


Birs, Basel



Birs, Basel

Prozessraum E – Dynamisierte Flusslandschaften



Isar, München



Image © 2009 AeroWest

Image © 2009 COWI A/S, DDO

2009 Google

Bildaufnahmedaten: 8. Apr. 2006 - 25. Aug. 2007

48°06'50.56" N 11°34'08.02" E

Sichthöhe 4.26 km

Isar, München

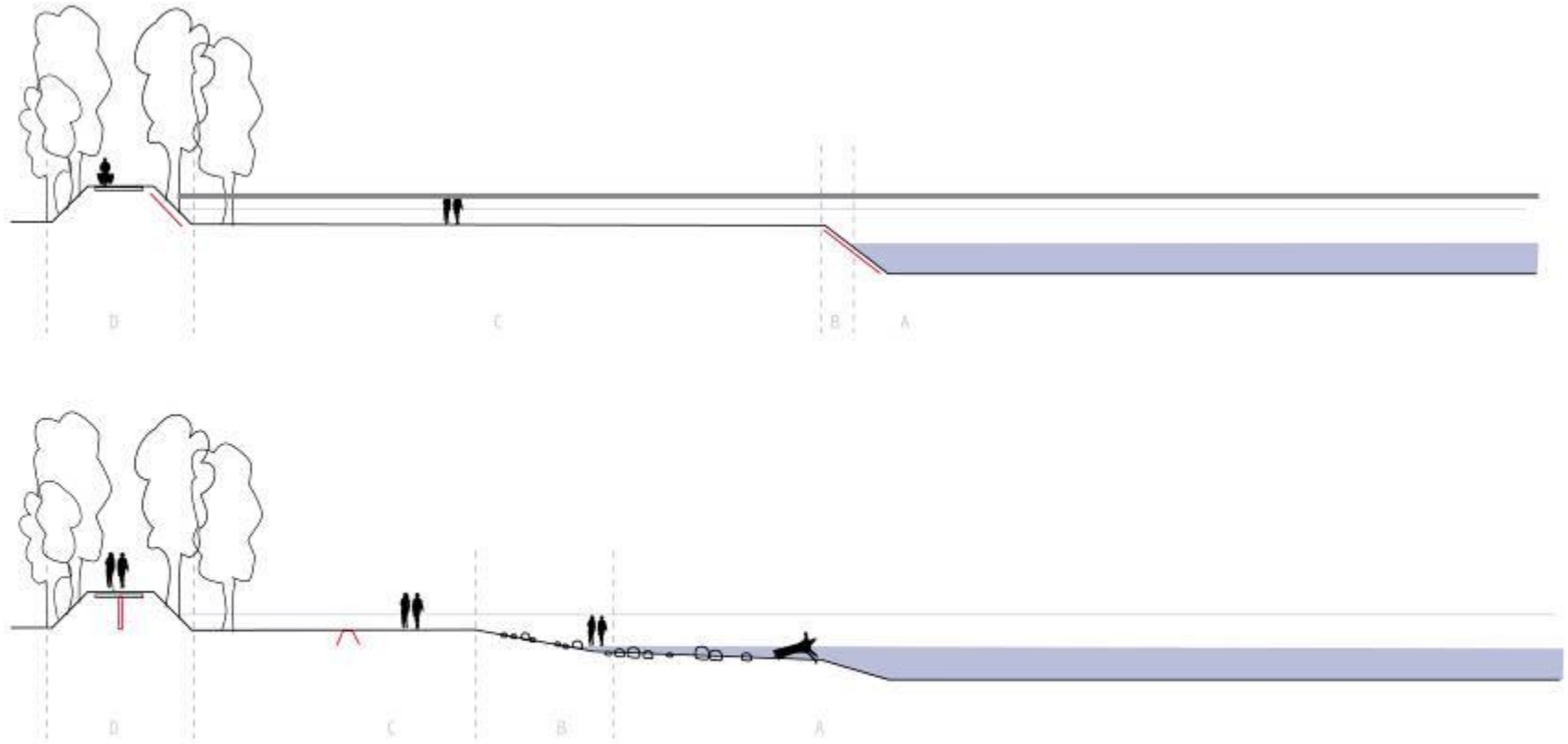


Isar, München



Isar, München

Isar – Schnitte vorher/ nachher

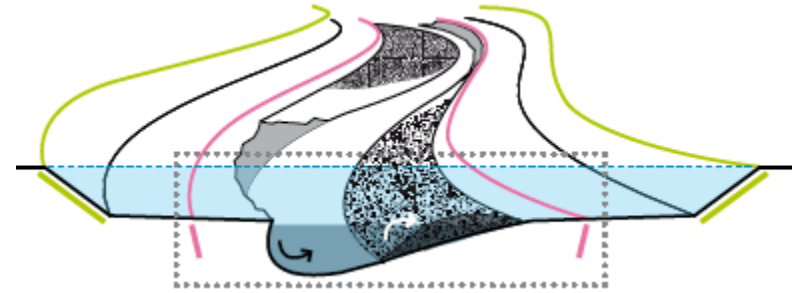


Isar - München

Deichsicherung und „Schlafende Sicherung“



Prozessraum E – Dynamisierte Flusslandschaften



Aire, Genf



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LIT MOUILLÉ | JUIN 2014



LOSANGES | DÉCEMBRE 2014



LIT MOUILLÉ | DÉCEMBRE 2014



LOSANGES | MAI 2015



LIT MOUILLÉ | MAI 2015



LOSANGES | OCTOBRE 2015

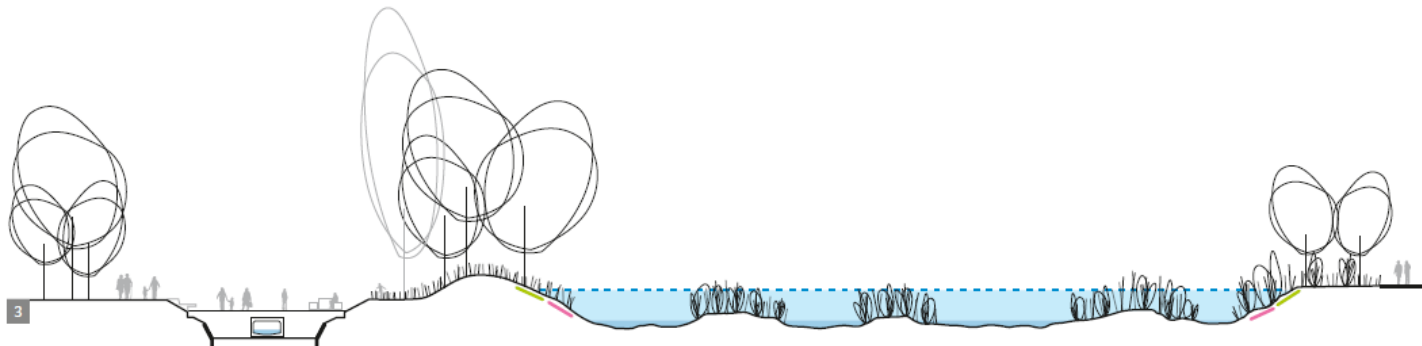
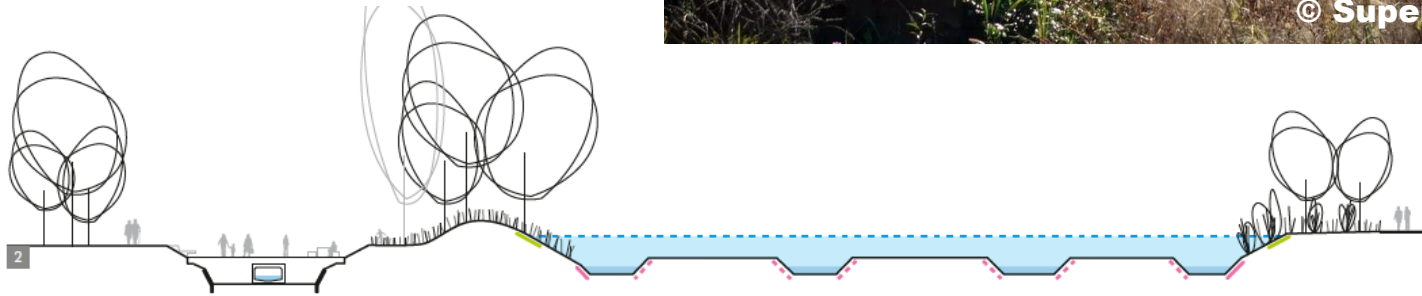


LIT MOUILLÉ | OCTOBRE 2015



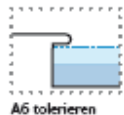
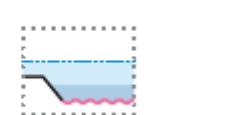
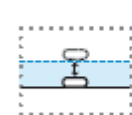
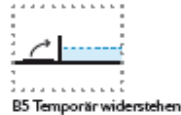
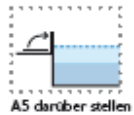
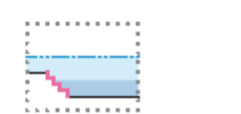
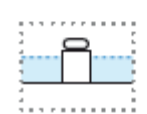
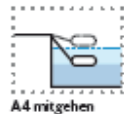
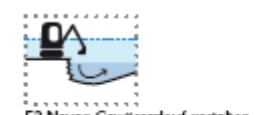
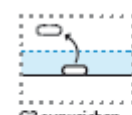
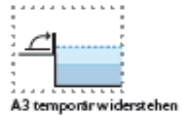
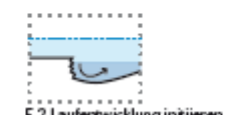
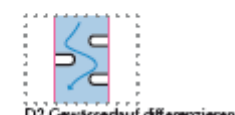
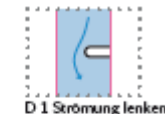
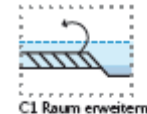
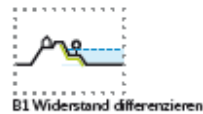


© Superpositions



Aire, Genf

Entwurfstrategien & Elemente



Fluss. Raum. Entwerfen.

Planungsstrategien
für urbane
Fließgewässer

Herbert Dreiselt
Herbert Dreiselt
Herbert Dreiselt
Herbert Dreiselt
Herbert Dreiselt

1

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Herbert Dreiselt

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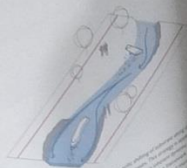
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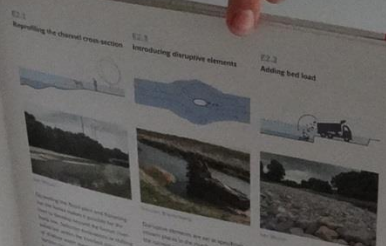
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MARTIN PRUMINDSKI 09.2012

Initiating channel dynamics



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- 16. ...
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- 19. ...
- 20. ...



E2.1 Repelling the channel cross-section
The channel cross-section is a key parameter in determining the flow characteristics of a river. It influences the velocity, discharge, and sediment transport. A wide, shallow channel typically has a lower velocity and higher sediment transport capacity, while a narrow, deep channel has a higher velocity and lower sediment transport capacity.

E2.2 Introducing disruptive elements
Disruptive elements, such as rocks, logs, and vegetation, can be introduced into a channel to alter its flow characteristics. These elements can create turbulence, reduce the velocity, and increase the sediment transport capacity. They can also create a more natural, irregular channel cross-section.

E2.3 Adding bed load
Adding bed load to a channel can increase its sediment transport capacity and create a more natural channel cross-section. Bed load can be added in the form of rocks, logs, and vegetation. It can also be added in the form of sediment, such as sand and silt.

Many of these rivers lack natural sediment input. When the river flows from a reservoir, the sediment is trapped in the reservoir and does not reach the river. This leads to a lack of sediment input, which can cause the channel to become narrower and deeper. This is a problem because a narrower and deeper channel has a higher velocity and a lower sediment transport capacity. This can lead to a higher risk of flooding and a lower sediment transport capacity.

Bed load elements are not as simple as they seem. They can have a variety of effects on the channel. For example, a large rock can create a turbulence that can reduce the velocity and increase the sediment transport capacity. A log can create a turbulence that can reduce the velocity and increase the sediment transport capacity. A log can also create a turbulence that can reduce the velocity and increase the sediment transport capacity.

Bed load elements can also be used to create a more natural channel cross-section. For example, a large rock can create a turbulence that can reduce the velocity and increase the sediment transport capacity. A log can create a turbulence that can reduce the velocity and increase the sediment transport capacity. A log can also create a turbulence that can reduce the velocity and increase the sediment transport capacity.

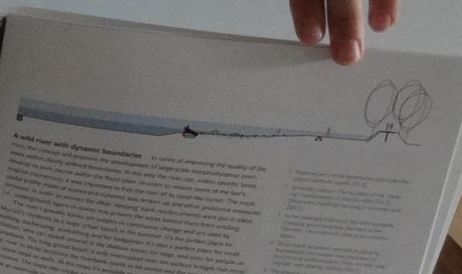
A
B
C
D
E



Isar
The Isar is a river in the German state of Bavaria. It is a tributary of the Danube. The river is 180 km long and has a catchment area of 10,000 km². The river is known for its scenic views and its role in the local economy. The river is also a popular destination for tourists and outdoor enthusiasts.

Design goals

- 1. ...
- 2. ...
- 3. ...
- 4. ...
- 5. ...
- 6. ...
- 7. ...
- 8. ...
- 9. ...
- 10. ...



A solid river with dynamic boundaries
A solid river with dynamic boundaries is a river that has a fixed channel cross-section but a dynamic flow. This means that the river has a fixed channel cross-section but the flow characteristics can change over time. This is a problem because a fixed channel cross-section has a lower sediment transport capacity and a higher risk of flooding. A dynamic flow can create a more natural channel cross-section and increase the sediment transport capacity.

Flowing process
The flowing process is a key parameter in determining the flow characteristics of a river. It influences the velocity, discharge, and sediment transport. A wide, shallow channel typically has a lower velocity and higher sediment transport capacity, while a narrow, deep channel has a higher velocity and lower sediment transport capacity.





Prof. Dr.-Ing. Martin Prominski, Leibniz Universität Hannover
Wasserorientierte Stadtgestaltung für
Menschen und Gewässer

Unser Zeitalter: Das Anthropozän



“For the past three centuries, the effects of humans on the global environment have escalated. Because of these anthropogenic emissions of carbon dioxide, global climate may depart significantly from natural behaviour for many millennia to come. It seems appropriate to assign the term ‘Anthropocene’ to the present, in many ways human-dominated, geological epoch, supplementing the Holocene“

**Paul Crutzen, Nobelpreisträger 1995 in Chemie
(In: Nature, Vol. 415, 3 January 2002, S.23)**

SOCIO-ECONOMIC TRENDS



EARTH SYSTEM TRENDS

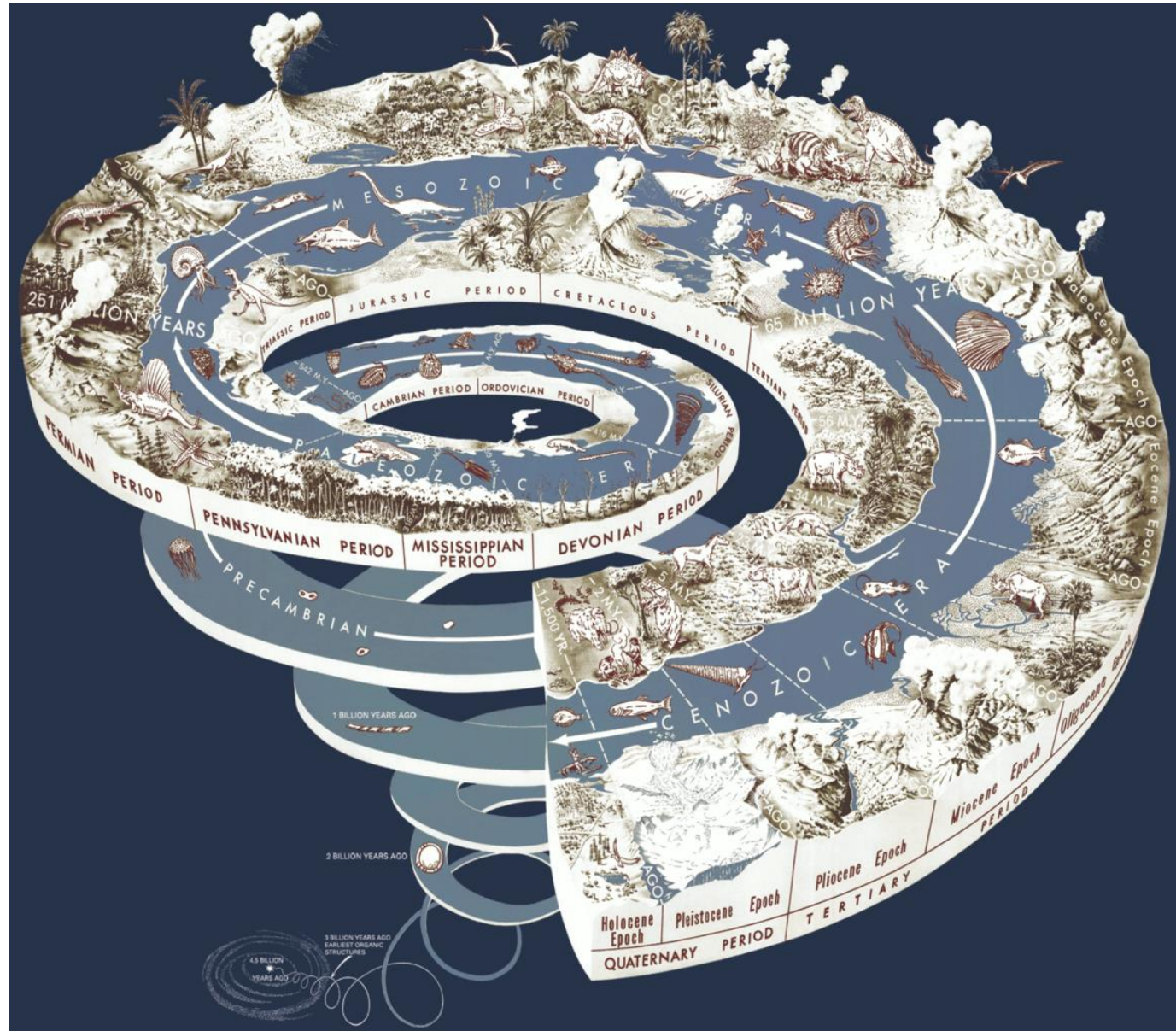


REFERENCE: Steffen, W., Broadgate, L., Deutsch, O., Gaffney, O. & Ludwig, C. (2015), The Trajectory of the Anthropocene: the Great Acceleration, Submitted to *The Anthropocene Review*.

MAP & DESIGN: Félix Pharand-Deschênes / Globaia

Die große Beschleunigung

Unser Zeitalter: Das Anthropozän



Quelle:
<http://pubs.usgs.gov/gip/2008/58/> [accessed 24.11.2015]

Herausforderung des Anthropozäns:

**Die unauflöselichen
Verwebungen von Natur
und Kultur des
Anthropozäns als
multifunktionale
urbane Landschaften
gestalten**



„Die größten Widersprüche, die entgegengesetztesten Behauptungen, das Negieren des Ganzen zugunsten des Einzelnen, (...) das Zusammenprallen der verschiedensten Ziele bilden eine Atmosphäre, die den heutigen Menschen zum Verzweifeln und zu einer scheinbar noch nie dagewesenen Verwirrung führt.

Der heutige Mensch wird fortwährend vor die rasche Wahl gestellt: er soll unverzüglich eine Erscheinung bejahen und die andere ablehnen – entweder (...). Darin liegt die Tragik der Zeit. (...)



„Die größten Widersprüche, die entgegengesetztesten Behauptungen, das Negieren des Ganzen zugunsten des Einzelnen, (...) das Zusammenprallen der verschiedensten Ziele bilden eine Atmosphäre, die den heutigen Menschen zum Verzweifeln und zu einer scheinbar noch nie dagewesenen Verwirrung führt.

Der heutige Mensch wird fortwährend vor die rasche Wahl gestellt: er soll unverzüglich eine Erscheinung bejahen und die andere ablehnen – entweder oder (...). Darin liegt die Tragik der Zeit. (...)

Der Anfang besteht in der Erkenntnis der Zusammenhänge. Immer mehr wird man sehen können, daß es keine ‚speziellen‘ Fragen gibt, die isoliert erkannt oder gelöst werden können, da alles schließlich ineinander greift und voneinander abhängig ist. Die Fortsetzung des Anfangs ist: weitere Zusammenhänge zu entdecken und sie für die wichtigste Aufgabe des Menschen auszunützen – für die Entwicklung. (...)

Das 20. Jahrhundert steht unter dem Zeichen ‚und‘.“



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