

## Planen und Entscheiden unter Unsicherheit

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Sustaining the City - Nachhaltige räumliche Entwicklung weiterdenken: die offene Stadt  
4. April 2011



1. Was ist Unsicherheit?
2. Was sind Szenarien?
3. Entscheidungsfindung unter Unsicherheit



*Ohne die Erwartung, dass die Zukunft teilweise machbar und kontrollierbar ist, wofür man keine anderen Mittel als das heutige Wissen hat, ist jedes Planen sinnlos. Wenn das Ziel der Planung das Erreichen einer höheren Lebensqualität für zukünftige Generationen ist, dann muss man optimistisch sein bezüglich der Möglichkeiten, dieses Ziel zu erreichen.*

Rijksdienst voor de IJsselmeerpolders, 1981.

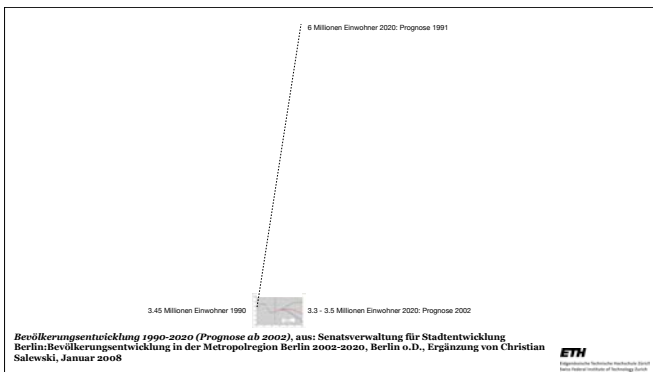
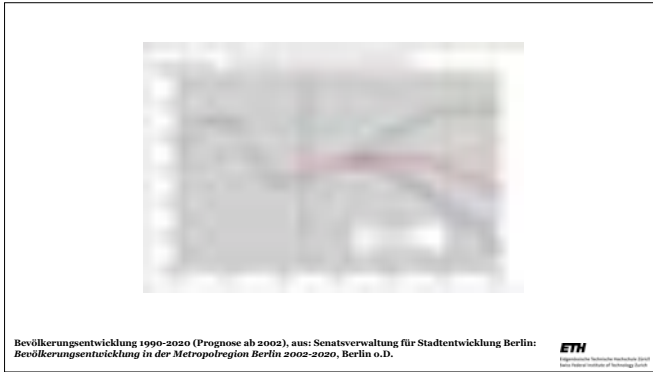


### 1. Was ist Unsicherheit?



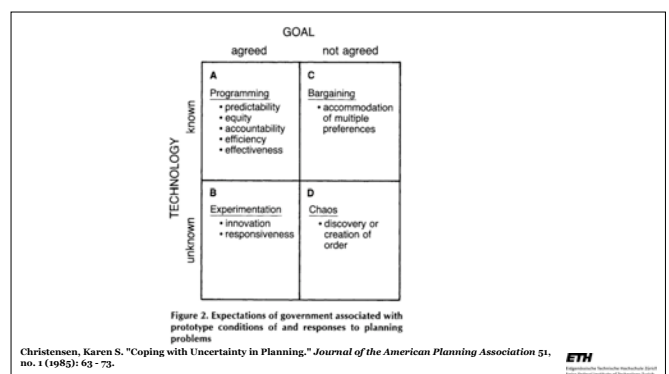
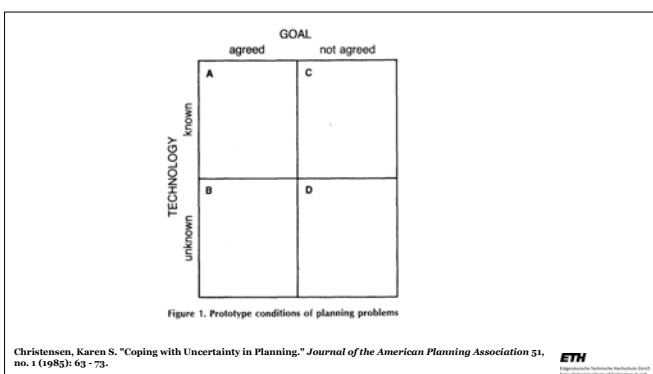
### Unsicherheit: Prognosen und Varianten

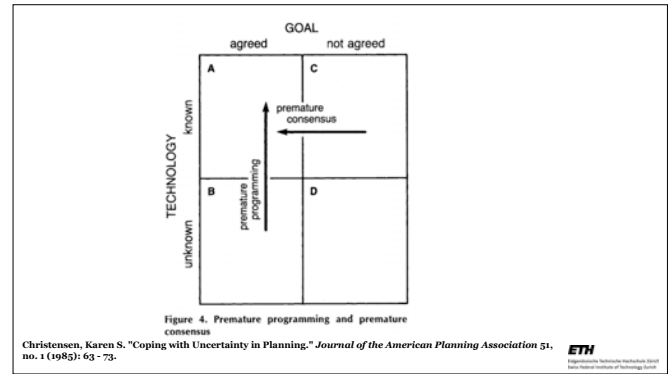
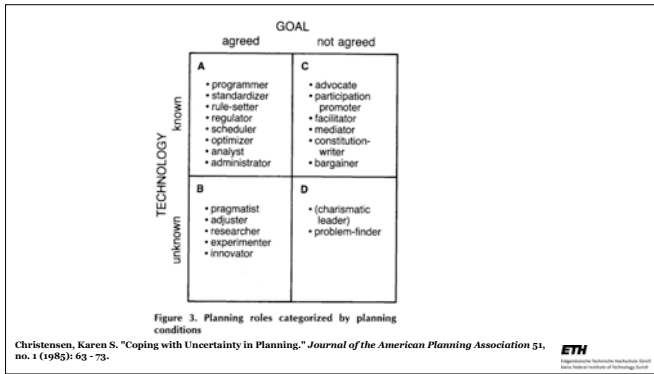




Unsicherheit: Ziele und Mittel

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Unsicherheit: eigenes und fremdes Wissen

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		known (means-ends relations and quantities)	unknown (means-ends relations and quantities)
types of knowledge	known (by decision makers)		
	unknown (by decision makers)		

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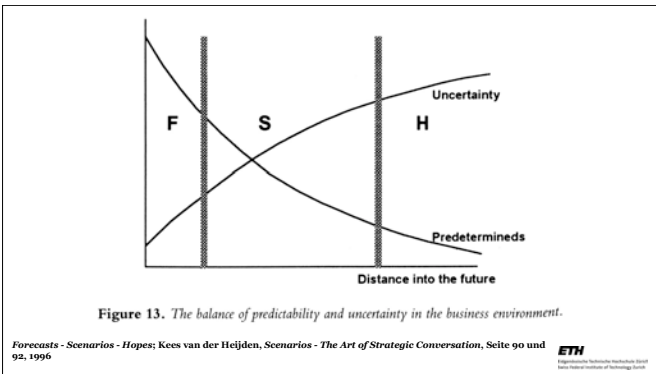
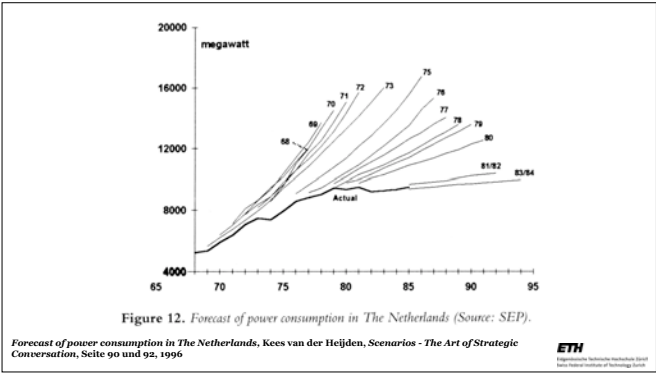
Unsicherheit: Wahrscheinlichkeit und Wirksamkeit

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		low impact	high impact
types of events	high probability		
	low probability		

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Unsicherheit: Betrachtungszeitraum

2. Was sind Szenarien?




Zukunftsbilder

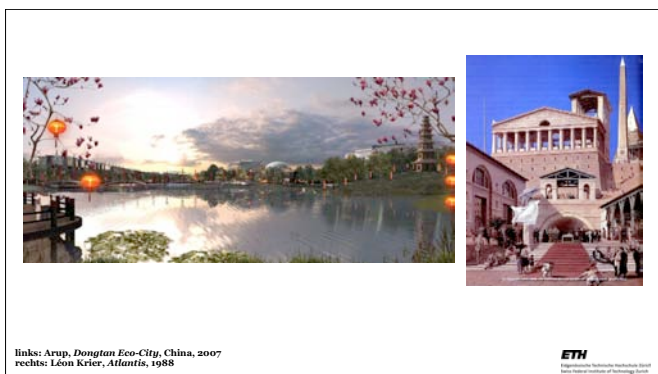
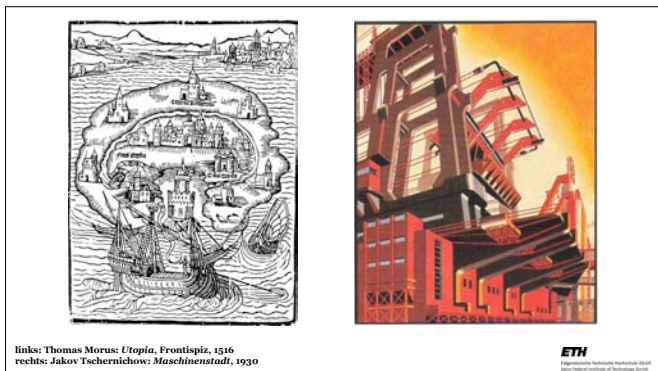


Fünf Typen von Zukunftsbildern

- Orakel
- Prophezeiung
- Utopien
- Prognosen
- Szenarien

Minois, Georges. Geschichte der Zukunft Orakel, Prophezeiungen, Utopien, Prognosen. Düsseldorf Zürich: Artemis & Winkler, 1998.





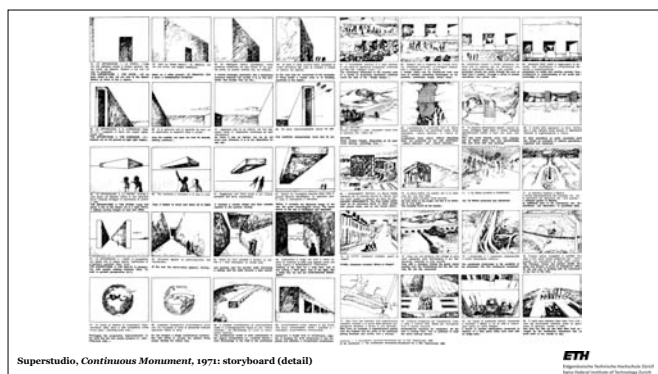
visions	options	scenarios	forecasts
onefold	manyfold	manyfold	ranged/ hedged
adaptive	static	dynamic	linear/ progressive
desirable	all desirable	un-/desirable, neutral	neutral
agreeable	convincing	plausible	mathematically correct
guiding	decision making	exploring	predicting
sufficiently vague	sufficiently detailed	sufficiently vivid	sufficiently stringent
aspiration	convention	new horizons	certainty
hopes	information	knowledge	assumptions
mid/long range	short/mid range	mid/long range	short/mid/long range
inspiring	binding	narrative	accurate
"cloudy"	"clear"	"transparent"	"firm"

Christian Salewski, *indicative criteria for the nature of plans: visions, options, scenarios, forecasts*, 2008

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Szenarien: Herkunft

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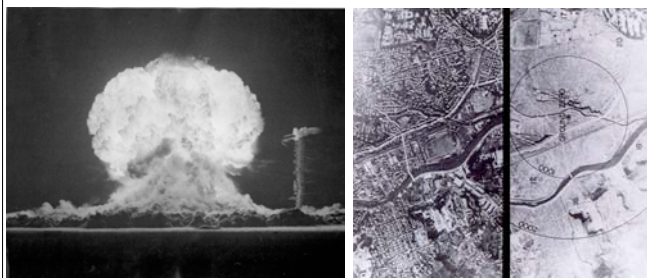


*Ein Szenario ist das Ergebnis des Versuchs,  
eine hypothetische Abfolge von Ereignissen  
mehr oder weniger detailliert zu beschreiben.*

Herman Kahn, *Thinking about the Unthinkable*, 1962



Herman Kahn (1922 - 1983)



links: Plumbomb/Bolzmann Detonation, May 28, 1957, Nevada Test Site. <http://www.ara.net/~pkxavets/plumbob.htm>, Januar 2008; rechts: Nagasaki, Japan, before and after the atomic bombing of August 9, 1945. [http://commons.wikimedia.org/wiki/Image:Nagasaki\\_1945\\_-\\_Before\\_and\\_after\\_\(adjusted\).jpg](http://commons.wikimedia.org/wiki/Image:Nagasaki_1945_-_Before_and_after_(adjusted).jpg), Januar 2008



*Wenn ein Szenario glaubwürdig sein soll,  
dann muss es sich natürlich am Anfang auf  
eine sinnvolle Version der Gegenwart  
beziehen, und es muss sich im Ablauf  
vernünftig an mögliche Verhaltensweisen von  
Menschen halten, obwohl es wichtig ist, sich  
nicht nur auf die glaubwürdigsten,  
konventionellen oder wahrscheinlichen  
Situationen und Verhaltensweisen zu  
beschränken.*

Herman Kahn, *Thinking about the Unthinkable*, 1962



#### Kerndefinition von Szenarien

Szenarien gehen immer von Hypothesen über die Zukunft aus und entwickeln eine Geschichte. Die Kombination von Imagination und Vernunft, von synchroner und diachroner Beschreibung, und der Fokus auf das Glaubwürdige sind die wichtigsten Eigenschaften von Szenarien.

Über die Zeit haben sich Ziele, Methoden und Formen von Szenarien erheblich verändert und angepasst.

core definition of scenarios, Christian Salewski, *Dutch New Worlds. Scenarios in Physical Planning and Design in the Netherlands, 1970-2000, 2010*




#### Kriterien für den Erkenntniswert von Szenarien

Abwägung zwischen Imagination und Vernunft  
Forschungsfrage, Modelle, Daten  
Zeit: gealterte Gegenwart oder offene Zukunft  
Fokus: Vorhersage oder Gedankenexperiment  
Massstab: räumliche Entwicklung und politische Werte


criteria for the cognitive value of scenarios, Christian Salewski, *Dutch New Worlds. Scenarios in Physical Planning and Design in the Netherlands, 1970-2000, 2010*



Szenarien: Typen




DATAR, *Le cône de développement. La méthode des scénarios*, 1972




type of scenario	aim(s) of scenario	premise(s) of scenario	used pathway
<b>trend scenario</b>	tries to determine a possible future	supposes the permanence and predomination of heavy trends	examines the future progress of these trends and their explanatory mechanisms
<b>framing scenario</b>	wants to delimit the space of possible futures	supposes the permanence and predomination of heavy trends	makes extreme variations of the hypotheses regarding the evolution of these trends
<b>normative scenario</b>	tries to produce one image of a possible and "desirable" future; establishes a path connecting this future with the present	supposes that one can define right from the start a set of possible objectives for realisation	makes a synthesis of these objectives and connects this image of the future to the present
<b>contrast scenario</b>	sketches a "desirable" future at the limits of the possible	supposes that one can define right from the start a set of objectives for realisation, getting rid of objectives of reference	makes a synthesis of these objectives for realisation and connects this image of the future to the present

four types of scenarios, DATAR, *La Methode des scénarios*, 1975

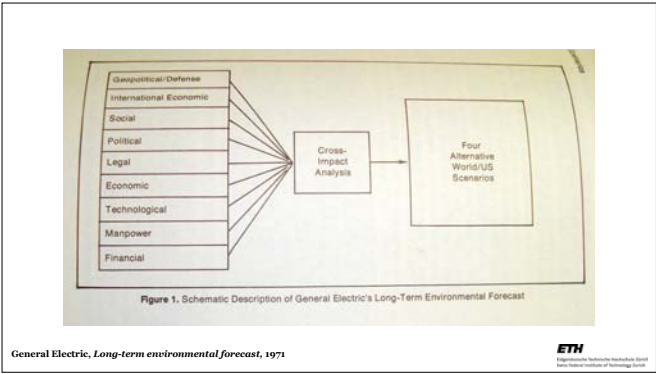


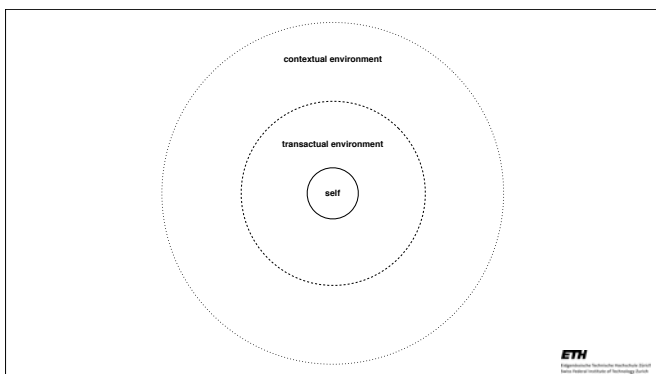
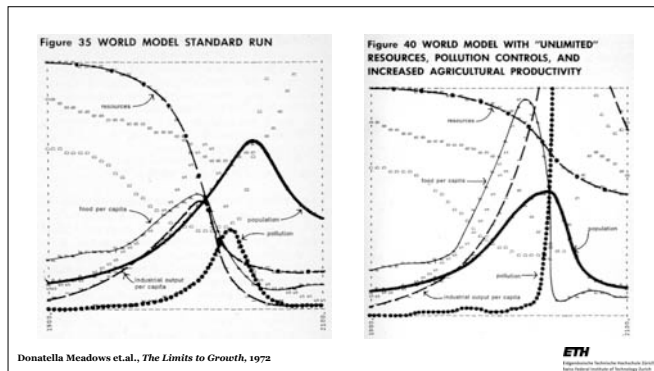
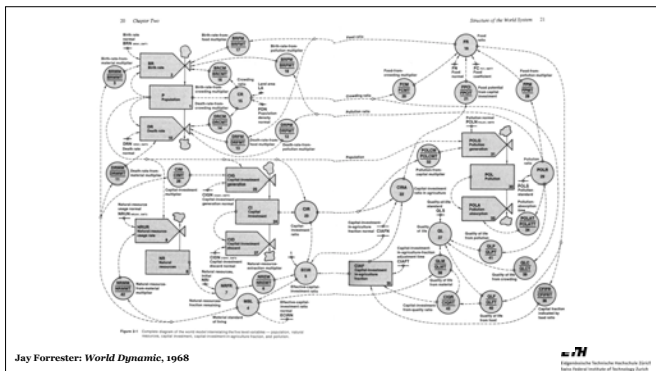
goals:	exploratory or pre-policy research
function:	process or product
inclusion of norms:	descriptive or predictive
subject:	issue-/area based or institution based
process design:	intuitive or analytical
input:	qualitative or quantitative
method:	participatory or model-based
group composition:	inclusive or exclusive
scenario content:	complex or simple
temporal nature:	chain or snapshot
factors:	heterogeneous or homogeneous
interconnection:	integrated or isolated

Summary of scenario typology, in: van Notten, Philip: *Writing on the Wall. Development in Times of Discontinuity*, dissertation.com: Boca Raton, Florida, 2005; p.36



Szenarien: Methoden



*Um sich gänzlich über die Form der Wirklichkeit bewusst zu werden ist es notwendig, an allen Seiten über ihre Grenzen hinauszublicken.*

Herman Kahn, 1963

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Szenarien: Funktionen

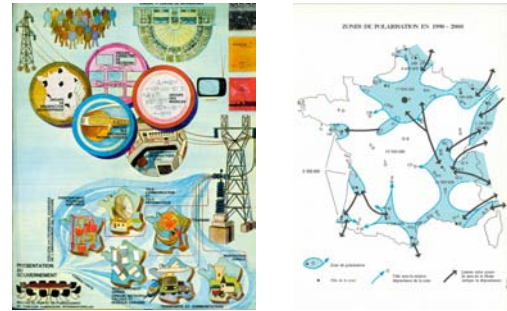
ETH



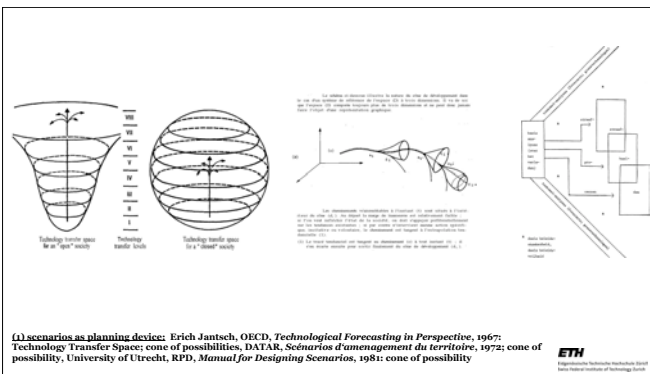
sechs Hauptfunktionen von Szenarien

- (1) Szenarien als Planungsinstrument
- (2) Szenarien als Instrument zum Generieren von Optionen / Form
- (3) Szenarien als Instrument der Vorhersage
- (4) Szenarien als Analyseinstrument
- (5) Szenarien als Kommunikationsinstrument
- (6) Szenarien als romantisches Instrument

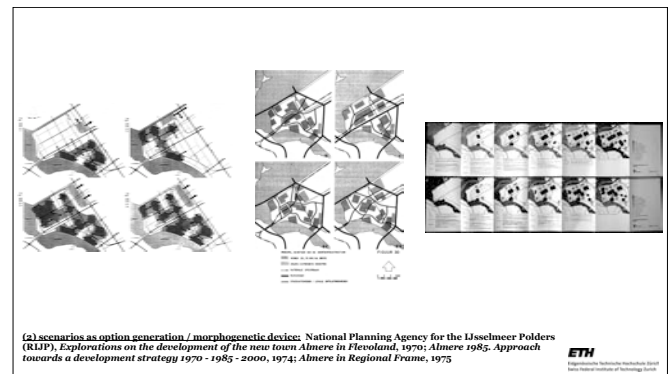
sechs Hauptfunktionen von Szenarien. Christian Salewski, *Dutch New Worlds. Scenarios in Physical Planning and Design in the Netherlands, 1970-2000*, 2010



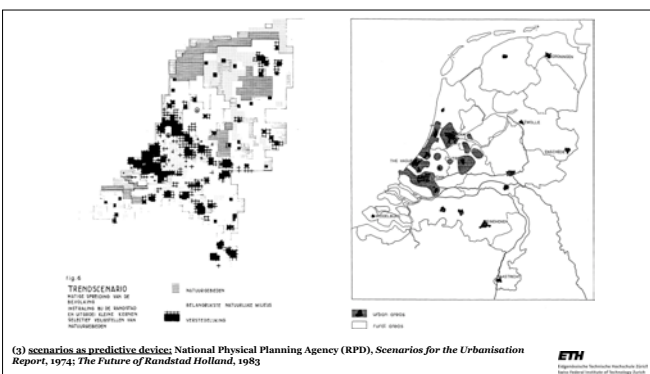
(1) scenarios as planning device: DATAR, *Système d'Études du Schéma d'Aménagement S.É.S.A.M.E.*, 1968 (Revue 2000) (left); DATAR, *Un Image de la France en l'an 2000. Scénario de l'inacceptable*, 1971; *Zones de Polarisation 1990-2000* (right)



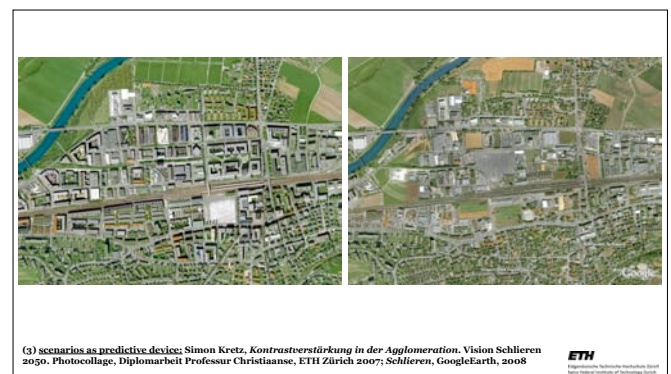
(1) scenarios as planning device: Erich Jantsch, OECD, *Technological Forecasting in Perspective*, 1967; Technology Transfer Space; cone of possibilities, DATAR, *Scénarios d'aménagement du territoire*, 1972; cone of possibility, University of Utrecht, RPD, *Manual for Designing Scenarios*, 1981; cone of possibility



(2) scenarios as option generation / morphogenetic device: National Planning Agency for the IJsselmeer Polders (RIJPD), *Explorations on the development of the new town Almere in Flevoland*, 1970; *Almere 1985. Approach towards a development strategy 1970 - 1985 - 2000*, 1974; *Almere in Regional Frame*, 1975



(3) scenarios as predictive device: National Physical Planning Agency (RPD), *Scenarios for the Urbanisation Report*, 1974; *The Future of Randstad Holland*, 1983

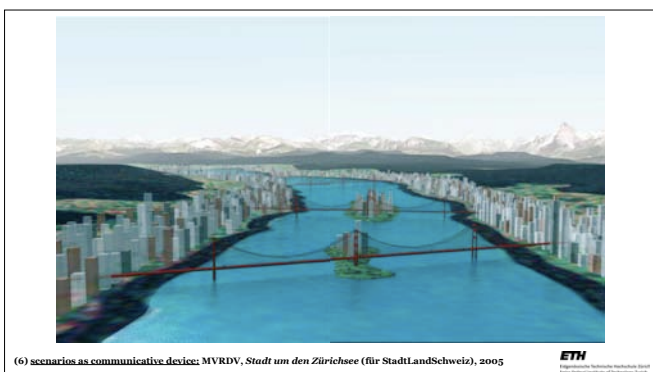
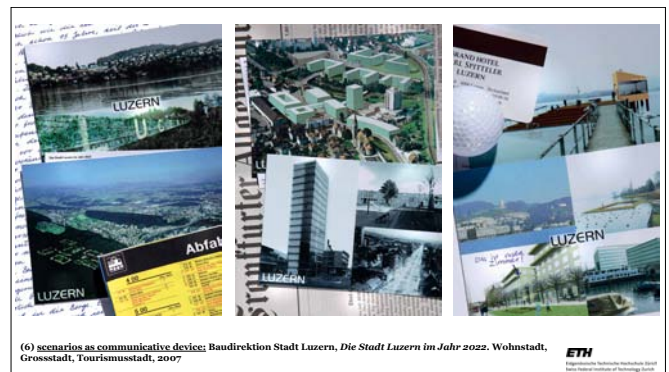
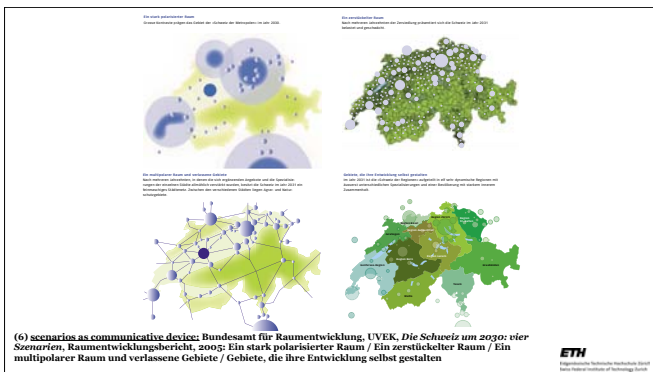
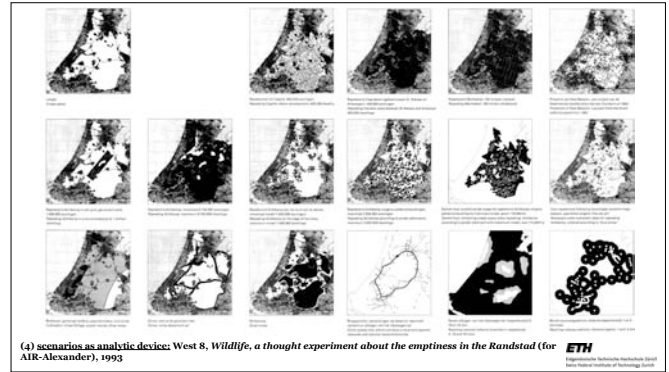


(3) scenarios as predictive device: Simon Kretz, *Kontrastverstärkung in der Agglomeration. Vision Schlieren 2050*. Photocollage, Diplomarbeit Professor Christiane, ETH Zürich 2007; *Schlieren*, GoogleEarth, 2008



	<i>liberal</i>	<i>sozialistisch</i>	<i>konfessionell</i>
Vertrauen in technokratische, Misstrauen in soziokratische Initiativen	L2	S2	C2
Vertrauen in soziokratische, Misstrauen in technokratische Initiativen	L3	S3	C3

(4) scenarios as analytic device; Scientific Council for Government Policy (WRR), *Policy-oriented explorations of the future (ETV)*, 1986/1983

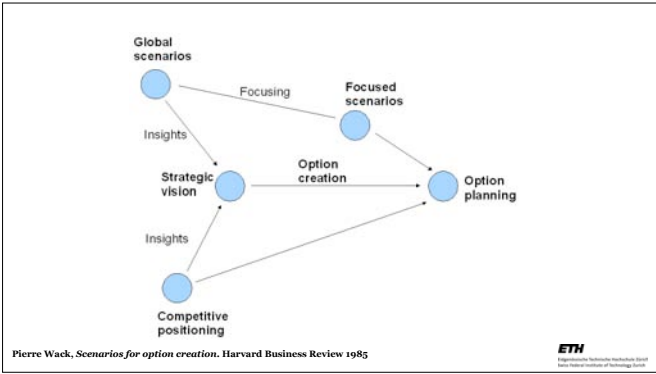
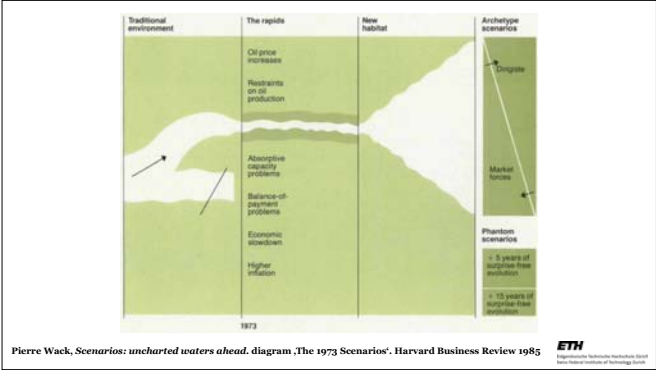


3. Entscheidungsfindung unter Unsicherheit

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Szenarien und Entscheidungsfindung

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Szenarien zur Darstellung und Einschränkung von Unsicherheit  
 (Rendering Uncertainty)

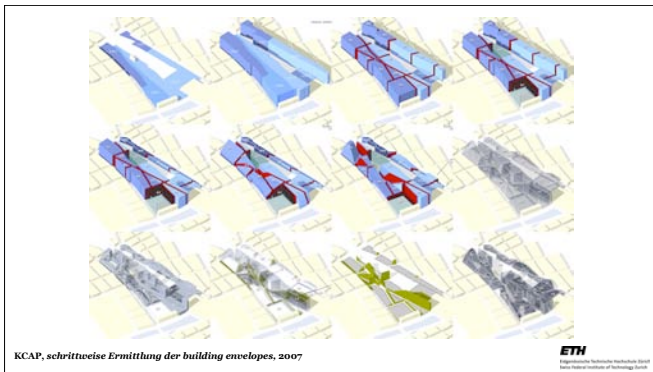
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“Rendering” (as used in Urban Design):

- (a) coloured perspective drawing that gives an impression of the future;
- (b) beyond visualization: making the idea accessible for an audience (stakeholders).



Hauptbahnhof Zürich mit temporären S-Bahnstationen, ca. 2007

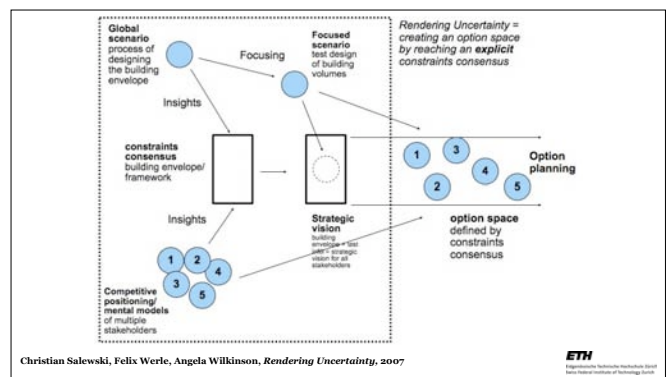


KCAP, schrittweise Ermittlung der building envelopes, 2007



- On the left, the opaque building envelopes were frequently misunderstood as building volumes.
- In the middle, the transparent building envelopes were readily accepted but considered to be too ambiguous about the future state of the project.
- Right, the eventual model that showed a possible future state of coloured building volumes and the building envelopes as wireframes.

KCAP, schrittweise Entwicklung der Darstellung der building envelopes, 2007



Christian Salewski, Felix Werle, Angela Wilkinson, *Rendering Uncertainty*, 2007






Rahmenwerke für Unsicherheit: Diversität als Risikominimierung



<b>The nature of wicked problems, Horst Rittel and Mevin Webber, 1973</b>
There is no definitive formulation of a wicked problem
Wicked problems have no stopping rule
Solutions to wicked problems are not true-or-false, but good-or-bad
There is no immediate and no ultimate test of a solution to a wicked problem
Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial-and-error, every attempt counts significantly
Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan
Every wicked problem is essentially unique
Every wicked problem can be considered to be a symptom of another problem
The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution
The planner has no right to be wrong


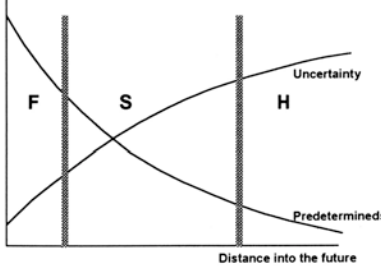
The nature of wicked problems. Source: Rittel, Horst W.J., Webber, Melvin M.: Dilemmas in a General Theory of Planning, Policy Sciences, 4, 1973 (155-169)



Herausforderungen städtebaulicher Aufgaben

- mehrere Akteure (multi-actorial)
- viele Anteilhaber (multi-stakeholder)
- überproportionale persönliche Einflussnahmen (agency)
- gemeine Probleme (wicked problems)
- öffentliches Interesse (public interest)
- wertebunden (value-loaded)
- meist sehr langfristig (long-term)
- oft sehr grossflächig (large-scale)
- > Komplexität (complexity)
- > Unsicherheit (uncertainty)

Christian Salewski, Herausforderungen städtebaulicher Aufgaben

**Figure 13.** The balance of predictability and uncertainty in the business environment.

Forecasts - Scenarios - Hopes; Kees van der Heijden, Scenarios - The Art of Strategic Conversation, Seite 90 und 92, 1996


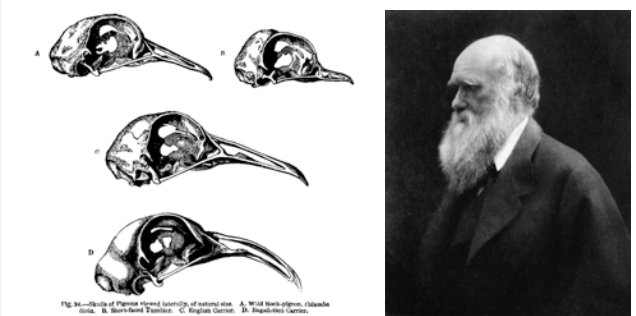

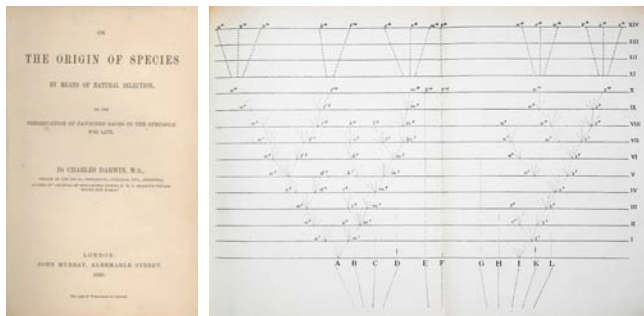




Fig. 34.—Skulls of Pigeons (showing diversity of natural size). A, Wild Rock-pigeon, Cullinaba Gullie. B, Rock-dove Pouter. C, English Carrier. D, Rock-dove Carrier.

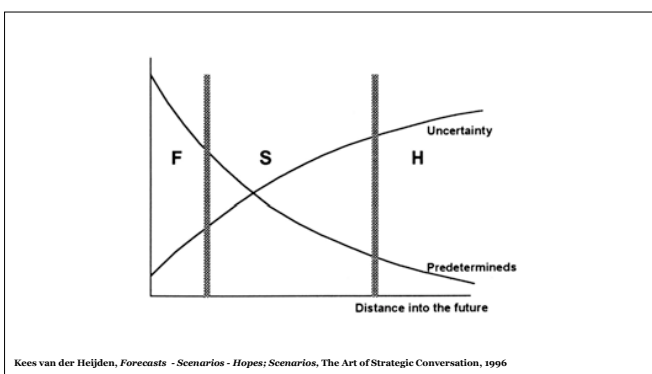
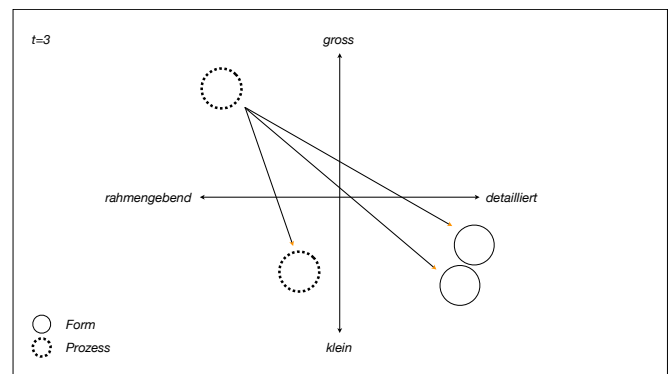
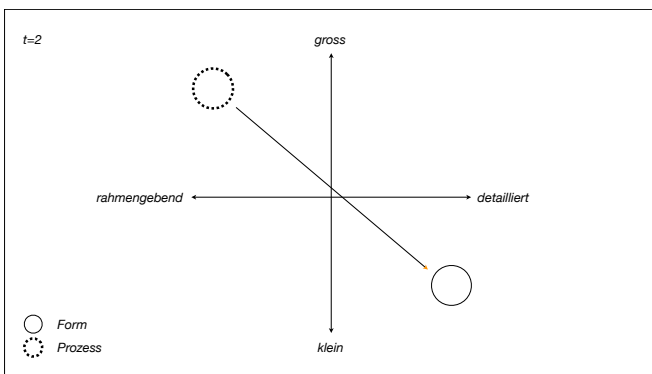
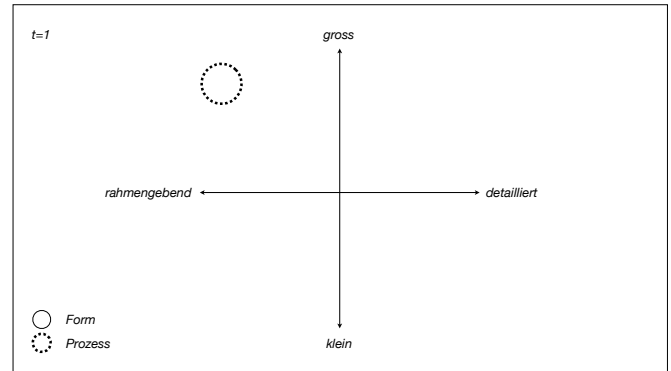
Pigeon skulls, as drawn by Darwin, 1868  
 Charles Darwin, photographed by Julia Margaret Cameron, 1868

THE ORIGIN OF SPECIES  
 BY MEANS OF NATURAL SELECTION,  
 OR THE PRESERVATION OF FAVORABLE VARIANTS TO THE STRUGGLE FOR LIFE.  
 IN THREE VOLUMES.  
 BY CHARLES DARWIN, M.A.  
 LONDON:  
 JOHN WHEAT, STAMBOURGH STREET,  
 1859.

Charles Darwin, The Origin of the Species/Diagram representing the divergence of species, 1859





Strategisches Entwerfen

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- 1) creating a desirable vision
- 2) radical questioning of instruments
- 3) controlling topology and fields of intervention
- 4) identifying key projects and priorities
- 5) working with existing structures and qualities
- 6) designing and testing new typologies
- 7) adapting to changing requirements
- 8) providing an applicable set of strategies

ETH Zürich, Institute of Urban Design, Teaching Agenda



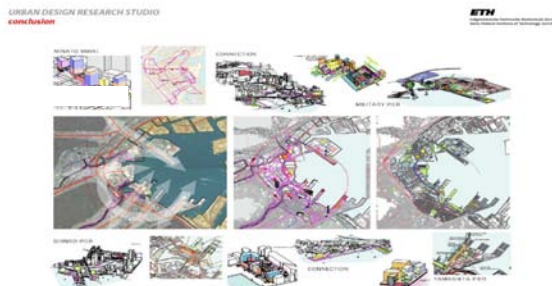
1) creating a desirable vision



ETH Zürich, Urbanity on the Waterfront, Visions for Yokohama, 2007. Vision

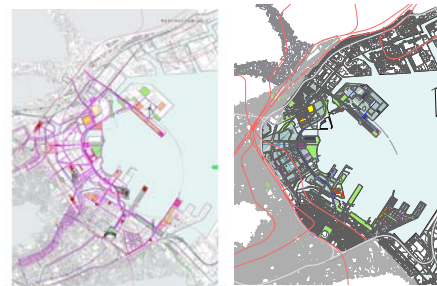


2) radical questioning of instruments



ETH Zürich, Urbanity on the Waterfront, Visions for Yokohama, 2007.  
 Übersicht Planungsinstrumente

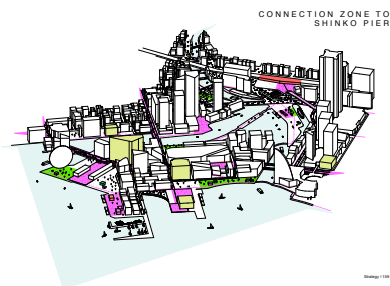
3) controlling topology and fields of intervention



ETH Zürich, Urbanity on the Waterfront, Visions for Yokohama, 2007.



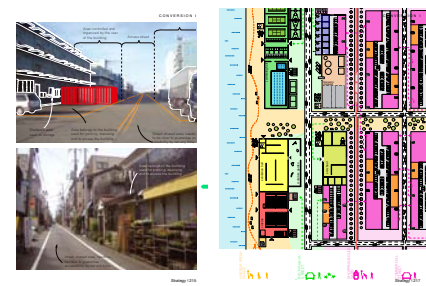
4) identifying key projects and priorities



ETH Zürich, Urbanity on the Waterfront, Visions for Yokohama, 2007.



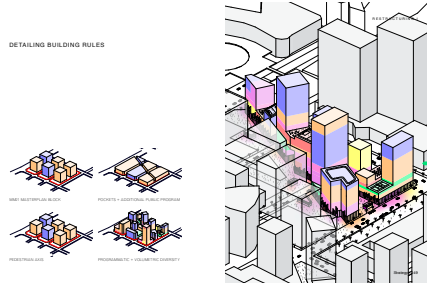
5) working with existing structures and qualities



ETH Zürich, Urbanity on the Waterfront, Visions for Yokohama, 2007. Naka-ku / Yamashita Pier



6) designing and testing new typologies



7) adapting to changing requirements



8) providing an applicable set of strategies

VISIONS FOR YOKOHAMA  
 URBANITY ON THE WATERFRONT



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ETH Zürich, Urbanity on the Waterfront, Visions for Yokohama, 2007

- 1) creating a desirable vision
- 2) radical questioning of instruments
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- 5) working with existing structures and qualities
- 6) designing and testing new typologies
- 7) adapting to changing requirements
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ETH Zürich, Institute of Urban Design, Teaching Agenda

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