Faculty of Design

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# The strengths / limits of Systems Thinking denote the strengths / limits of Practice-Based Design Research

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*„There is no purer myth than the notion of a science which has been purged of all myth.“* Michel Serres

# 1 Introduction / framing

Science claims the separation of the human (society) and the non-human (nature).

Latour (1998): „*Science and society cannot be separated, they depend on the same foundation. ...*“

**Design has always known this.**
**Design Research can build on it ...**

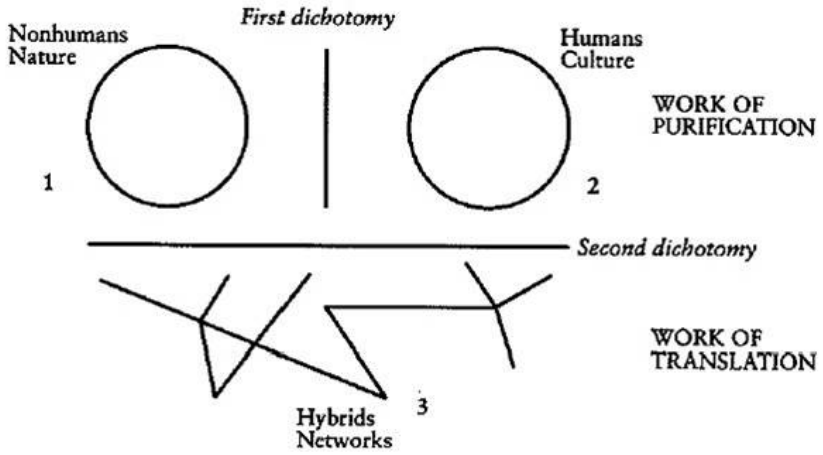
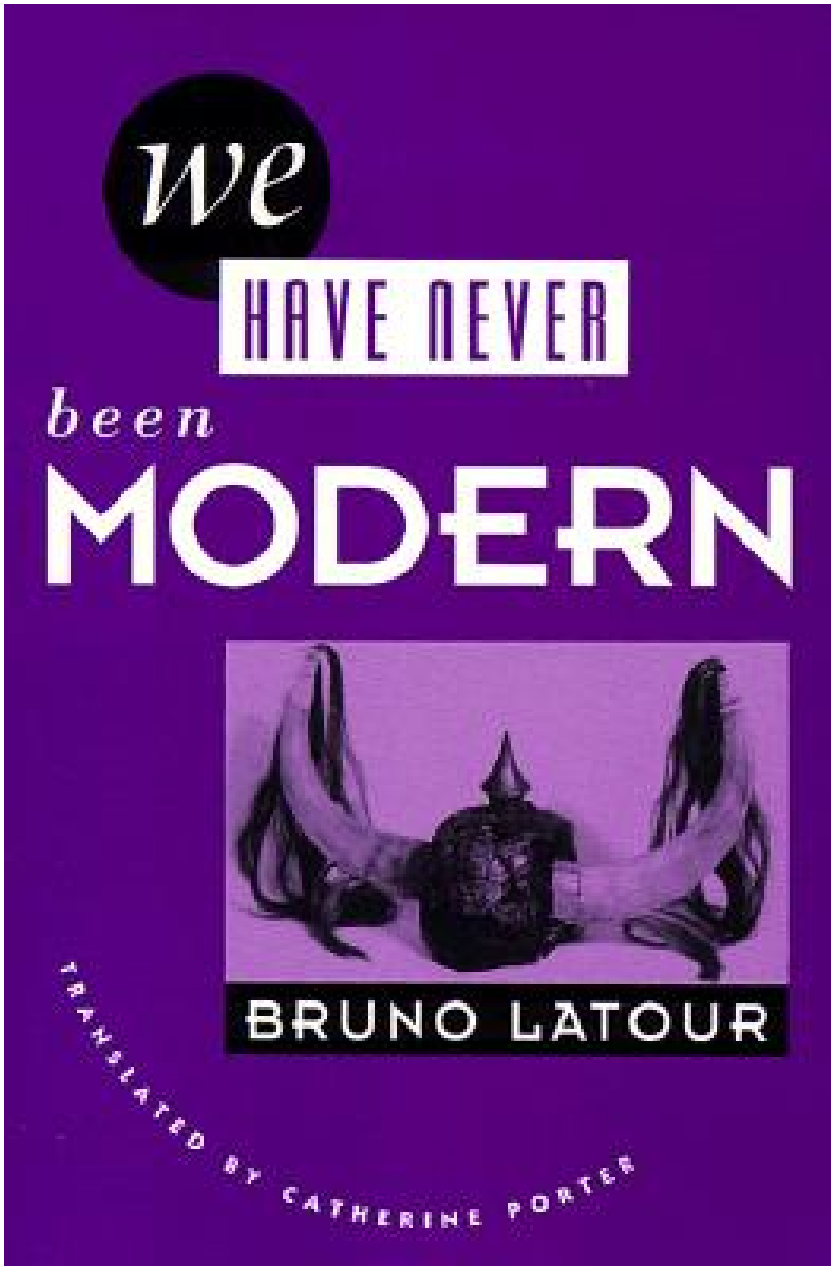



Figure 1.1 Purification and translation



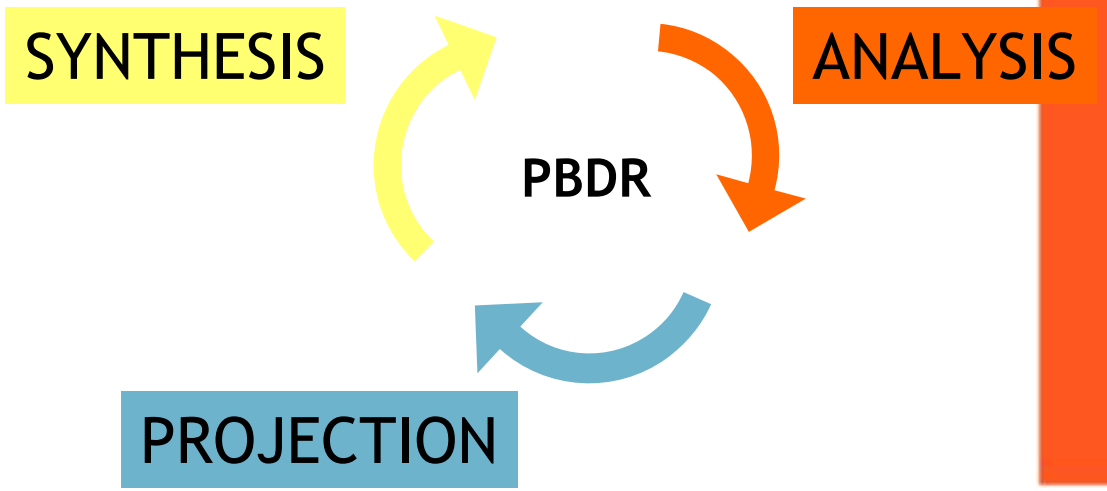
# 2 Practice-Based Design Research (PBDR) as focus of interest

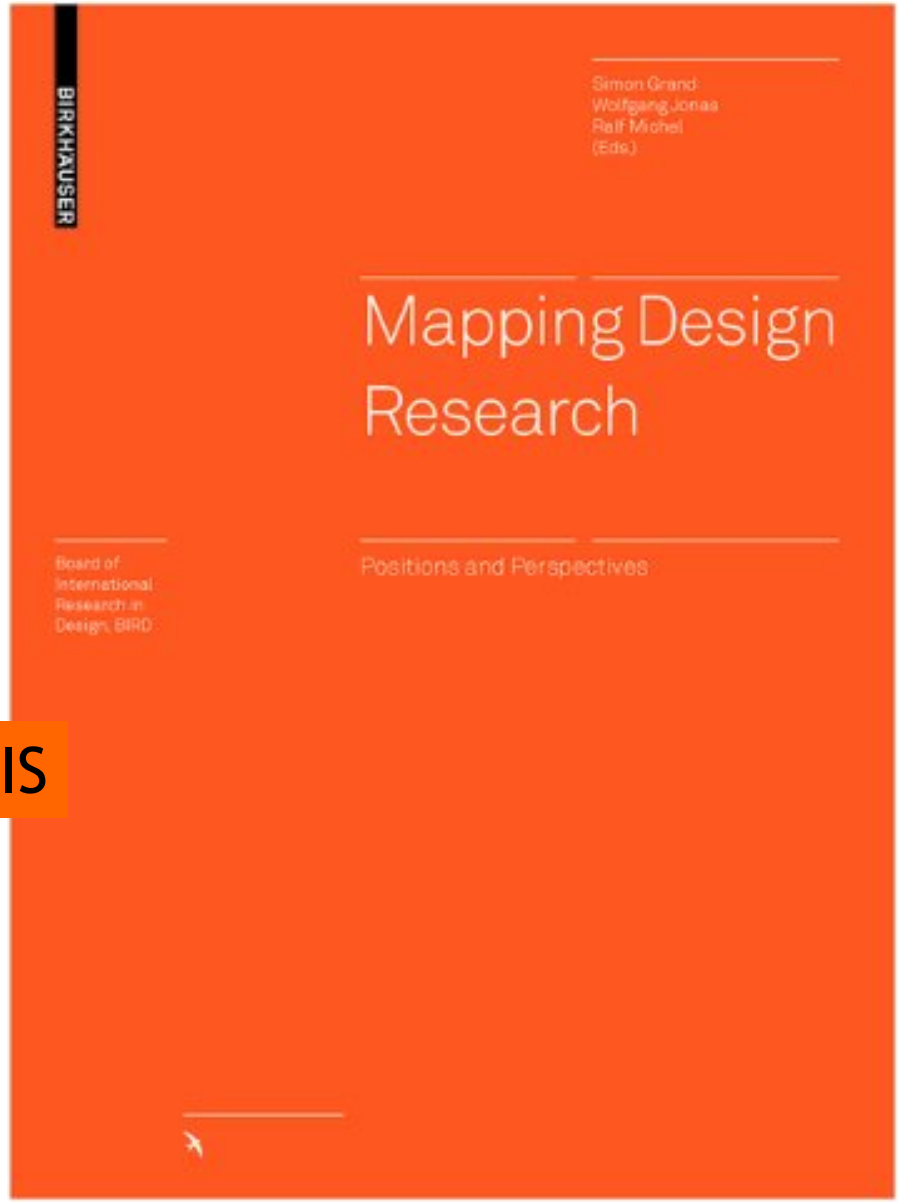
Design as a process of *„generating the unknown from the known“* (Hatchuel).

Descriptive **Analysis**, normative **Projection** and **Synthesis** are essential.

Controversies regarding the scientific validity of **PBDR**.

Adaptation to scientific standards impedes learning processes.



# 3 Fundamental problems and causal gaps

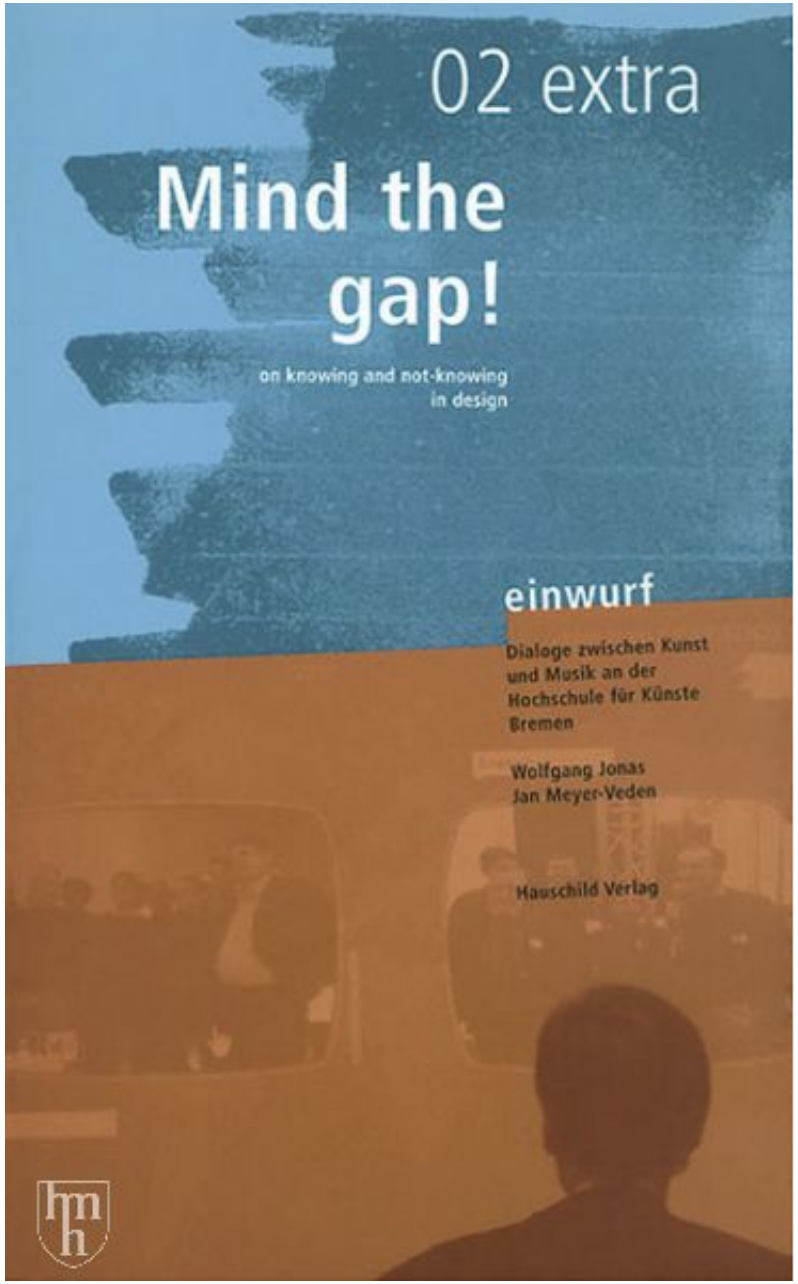
Problems of **control**, problems of **prediction**, incompatible domains of knowing lead to **causality gaps**.

Schön (1983) states the dilemma of “rigor or relevance”.

“high ground” - “swampy lowlands”

Required:

- an appropriate notion of **complexity**,
- ways of dealing with **uncertainty**,
- an integrative **epistemological** framework,
- the reflection of **observer involvement.**



# 4 Unresolvable blind spots

Blind spots comprise:

- unconscious and intransparent **value systems**,

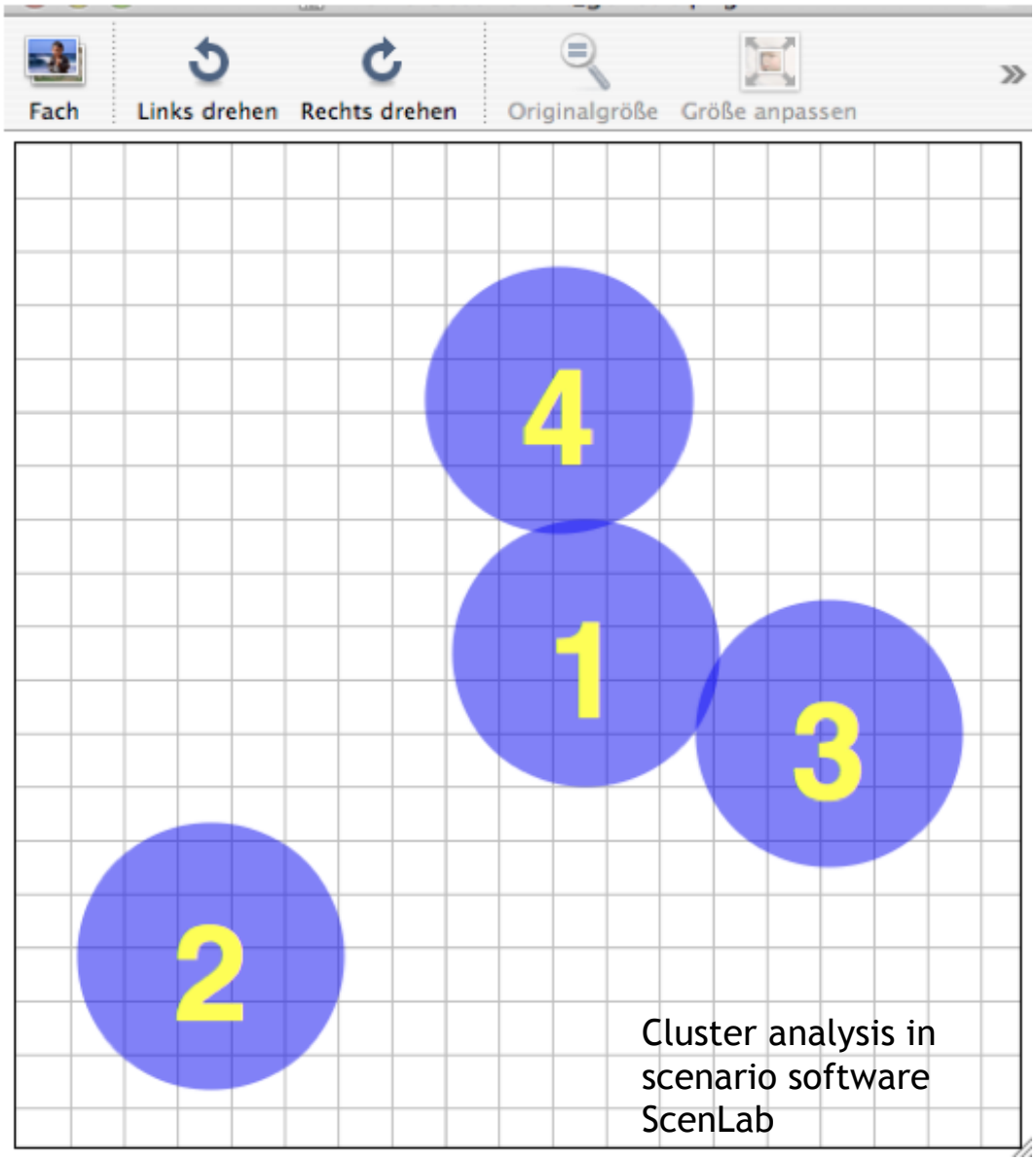
- implicit **driving forces**,

- biased, selective, unreflected **pasts**,

- pseudo-objective **scenario-techniques**.

Blind spots are the necessary condition of every observation.

**>>> use as many incoherent perspectives as possible**



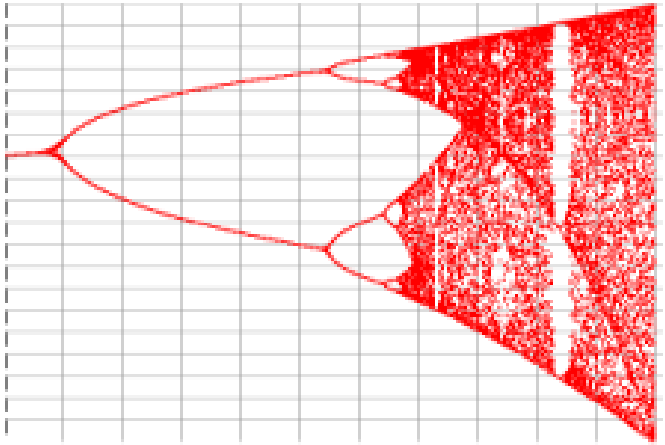

Cluster analysis in scenario software ScenLab

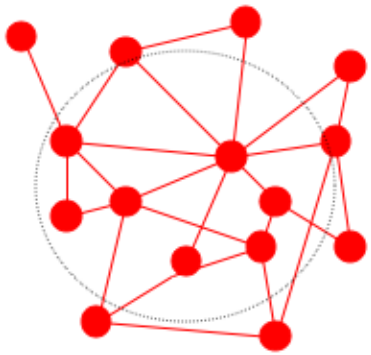
# 5 Paradox and oxymoron

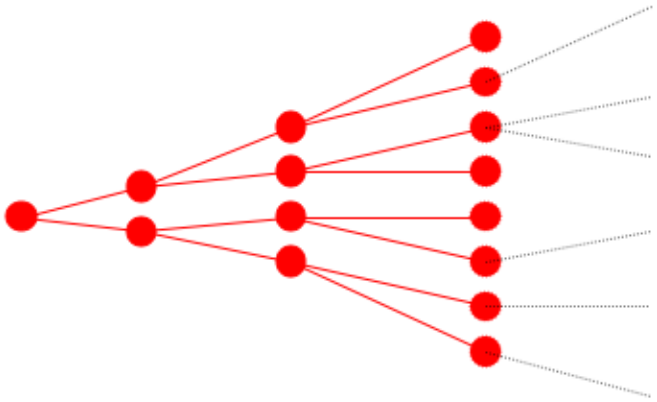
**Rittel** reveals the paradoxes: >> Planning as creating, exploring and reducing variety, Issue-Based Information Systems, planning as an argument ...

**Krippendorff** calls design research an "oxymoron": >> Design as the social construction of meaning through language by stakeholders ...

>> **Rorty** suggests narrative, speculative, poetic methods ...







# 6 Research Through Design (RTD) as an implementation of PBDR - C1

Design and Design Research as a cybernetic process of **experiential evolutionary learning** (Kolb).

**Research Through Design (RTD)** with **ANALYSIS – PROJECTION – SYNTHESIS** is one possible realization of PBDR. Note the analogy to the terminology of **Transdisciplinarity Studies**.

| Authors | Phases /components / domains of knowledge production | | |
|---|---|---|---|
| Jones (1970 | Divergence | Transformation | Convergence |
| Archer (1981) | Science | Design | Arts |
| Simon / Weick (1969) | Intelligence | Design | Choice |
| Nelson & Stolterman (2003) | The True | The Ideal | The Real |
| Jonas (2007) | ANALYSIS | PROJECTION | SYNTHESIS |
| Fallman (2008) | Design Studies | Design Exploration | Design Practice |
| Brown (2009) | Inspiration | Ideation | Implementation |
| **Transdisciplinarity Studies** | **System knowledge** | **Target Knowledge** | **Transformation Knowledge** |

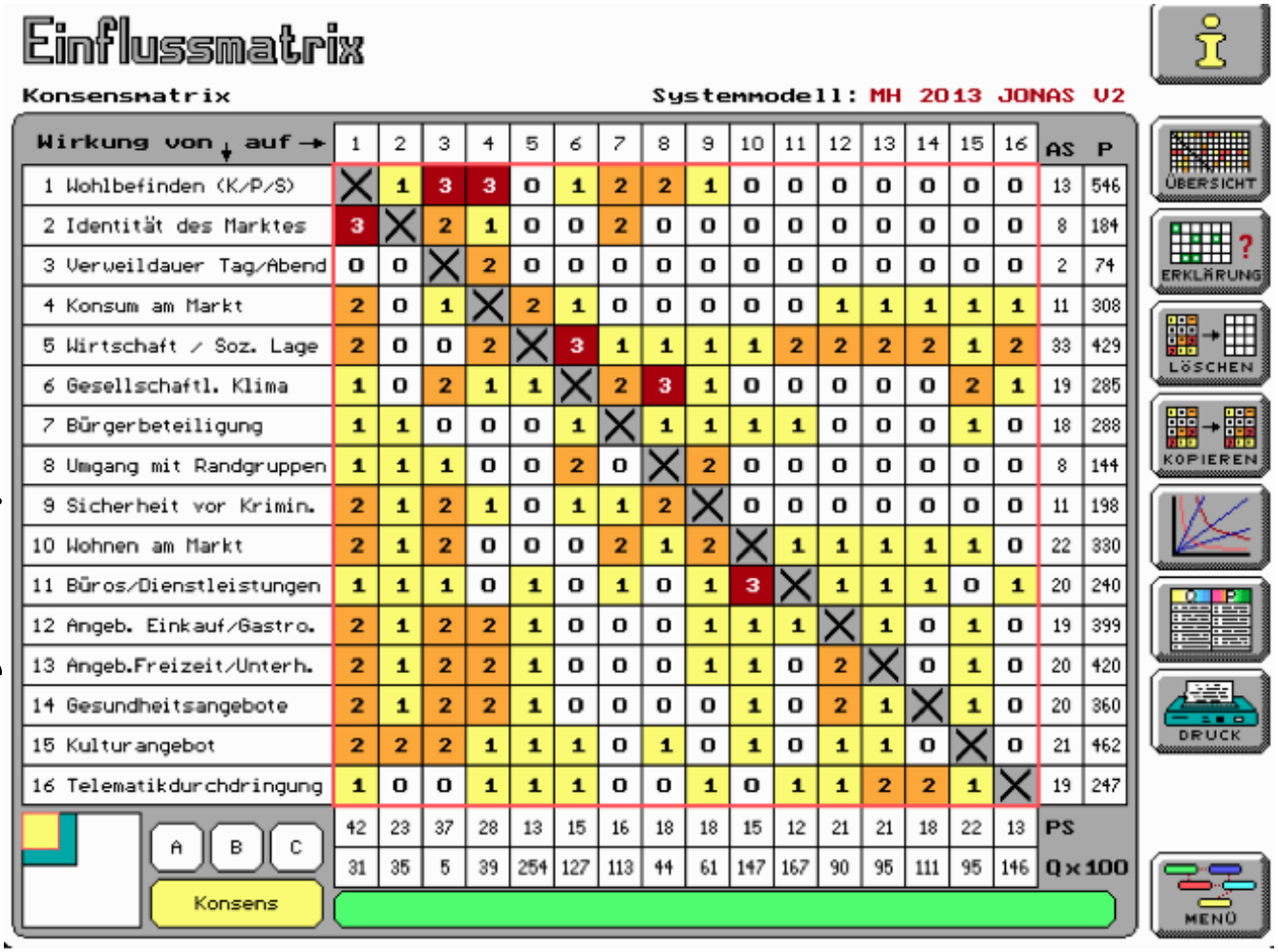
# 7 Systems Thinking constitutes RTD processes

Systems Thinking allows for the modelling of complex **design / inquiring systems** and thus provides a means of **communicating about** them and of **communicating within** them.

A purely scientific approach is unsuitable.

The differentiation between Design and Research is fuzzy, the transition is continuous.

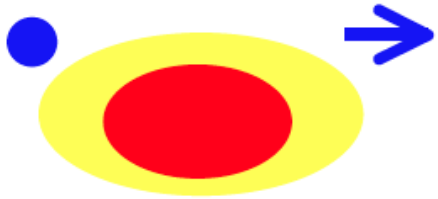
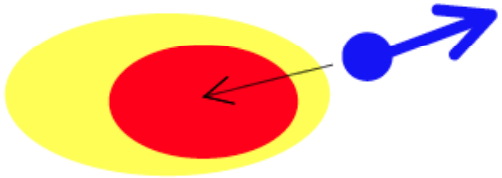
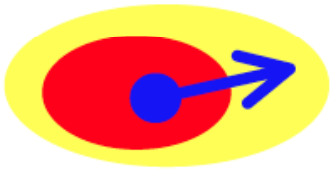
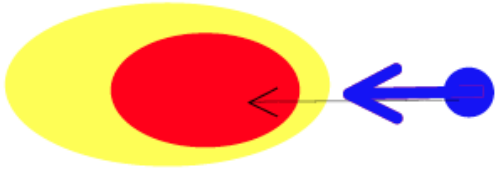
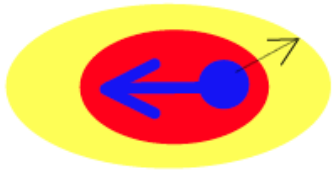
Design Research is done in a **„designerly“** mode with scientific support .



# 8 Reflecting observer modes - RTD requires the shift from C1 to C2

Distinguish between classical detached inquiry and situated inquiry.

C2 contributes to substantiate the concepts of **research FOR / ABOUT / THROUGH design**. A fourth mode shows up: research **AS** design.

| Observer position and perspective relative to the design / inquiring system and the life-world  | **1st order cybernetics**<br><br>Observer is situated outside the design / inquiring system<br><br>producing facts | **2nd order cybernetics**<br><br>Observer is situated inside the design / inquiring system<br><br>producing (arte)facts based on values |
|---|---|---|
| Observer looking outwards | **research FOR design**  | **research THROUGH design**  |
| Observer looking inwards | **research ABOUT design**  | **research AS design (?)**  |

# 9 Zooming in: RTD and (critical) systems thinking

The RTD model comprises **three core systemic dimensions:**

the **wider context** (yellow), **the design / inquiring system** (red),and the **driving force** (blue).

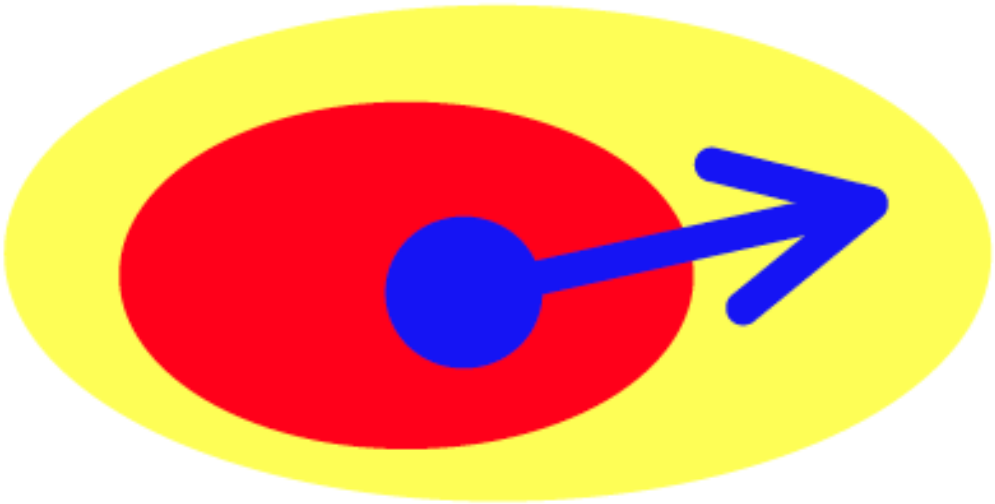
In Science:

- the wider context is excluded as far as possible,

-the design / inquiring system is considered as disembodied, objective, Cartesian observer,

- the driving force remains implicit.

**research THROUGH design**

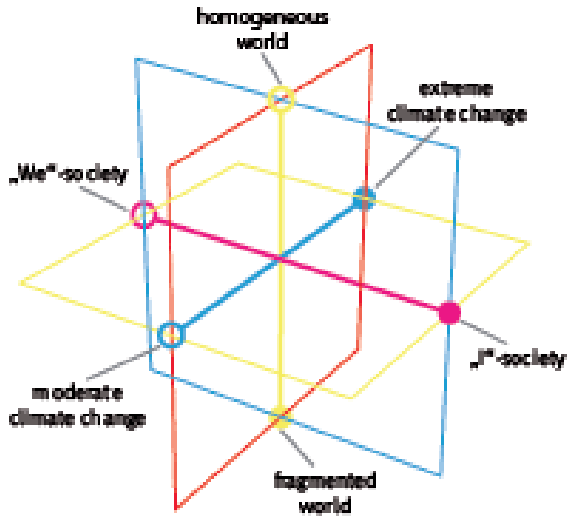


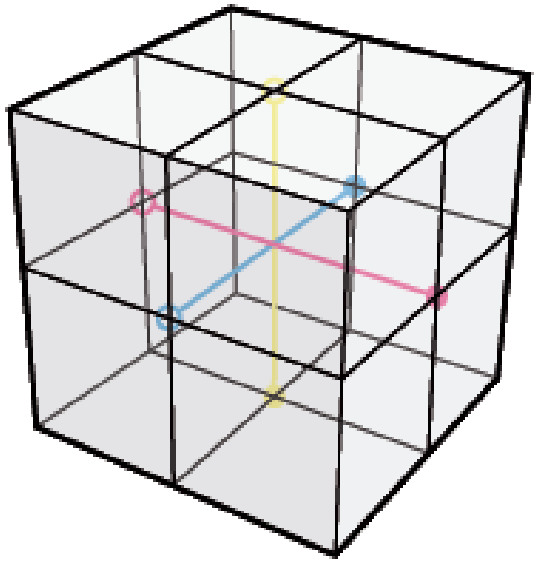
# 10 Relating RTD to a generic scenario model CFU

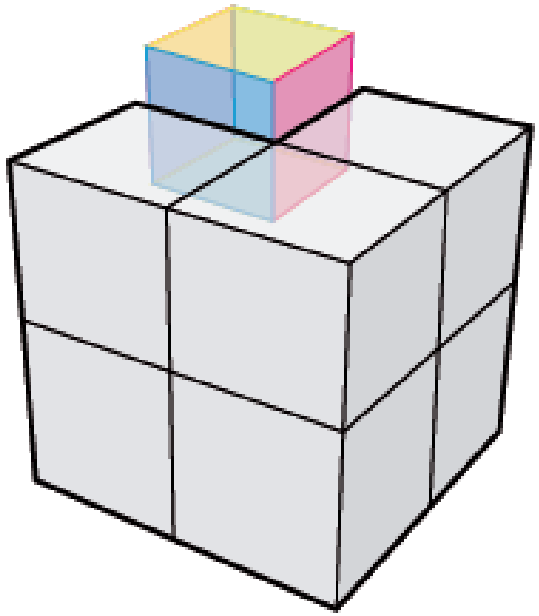
The **„Cube of Future Uncertainty“ (CFU)** is a generalized framework for scenario approaches, defined by the three above mentioned systemic dimensions of RTD:

- the wider context
- the design / inquiring system, and
- the driving force,

and thus establishes the **systems-based connection between ANALYSIS and SYNTHESIS by means of PROJECTION**.





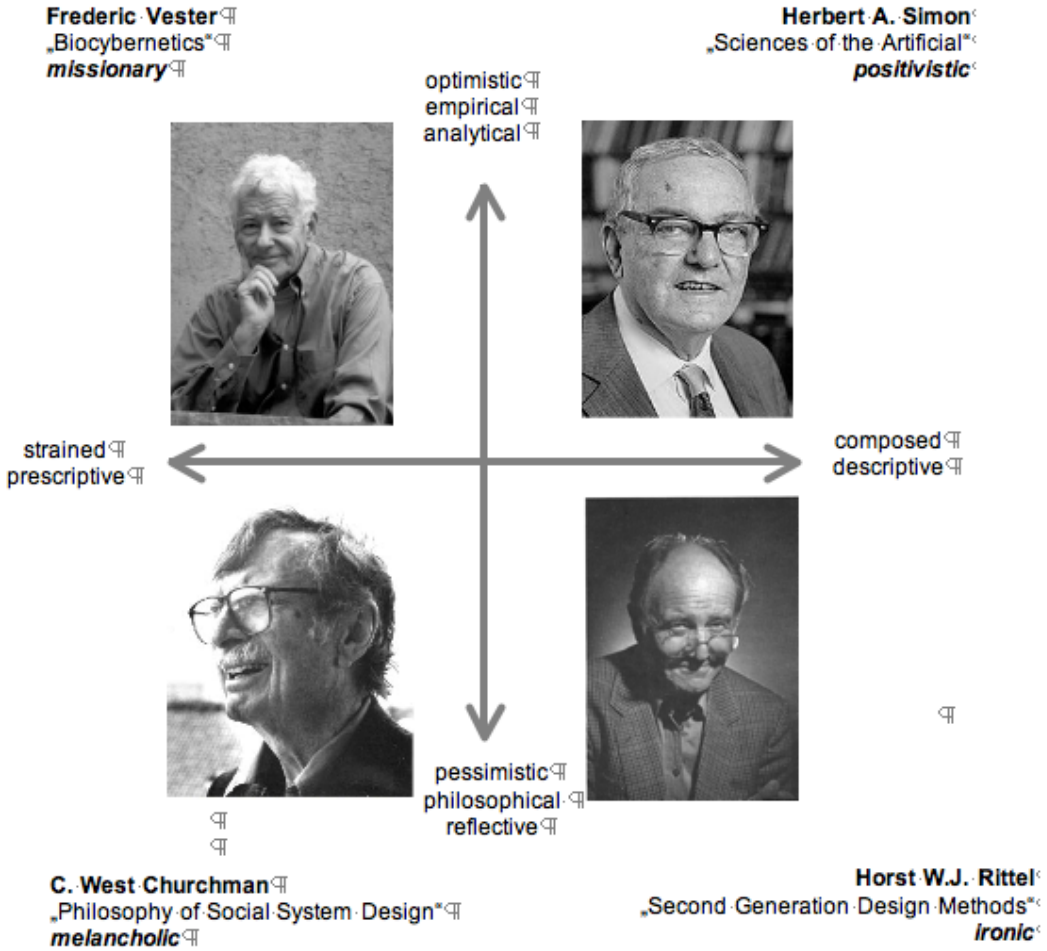
# 11 So what? Turning deficits and threats into strengths and opportunities

- **Systems thinking** and the positive acceptance of multi-perspectivity.
- The adoption of **generative approaches** as „playgrounds“ for exploration.
- The explicit integration of **facts and values** into our systems of inquiry.

Ulrich´s **Critical Systems Heuristics** provides a promising approach.

CSH comprises the reflection and determination of system **boundaries** and **driving forces** as well as questions of **legitimacy** ...

... influences from Churchman, Rittel, Simon, Vester, ...



# 12 Perspectives: Design as the new model for Transdisciplinary Science

- Science as a **sub-category** of Design (Glanville).

- The concept of **Mode-2 science** emphasizes socially robust instead of true knowledge.

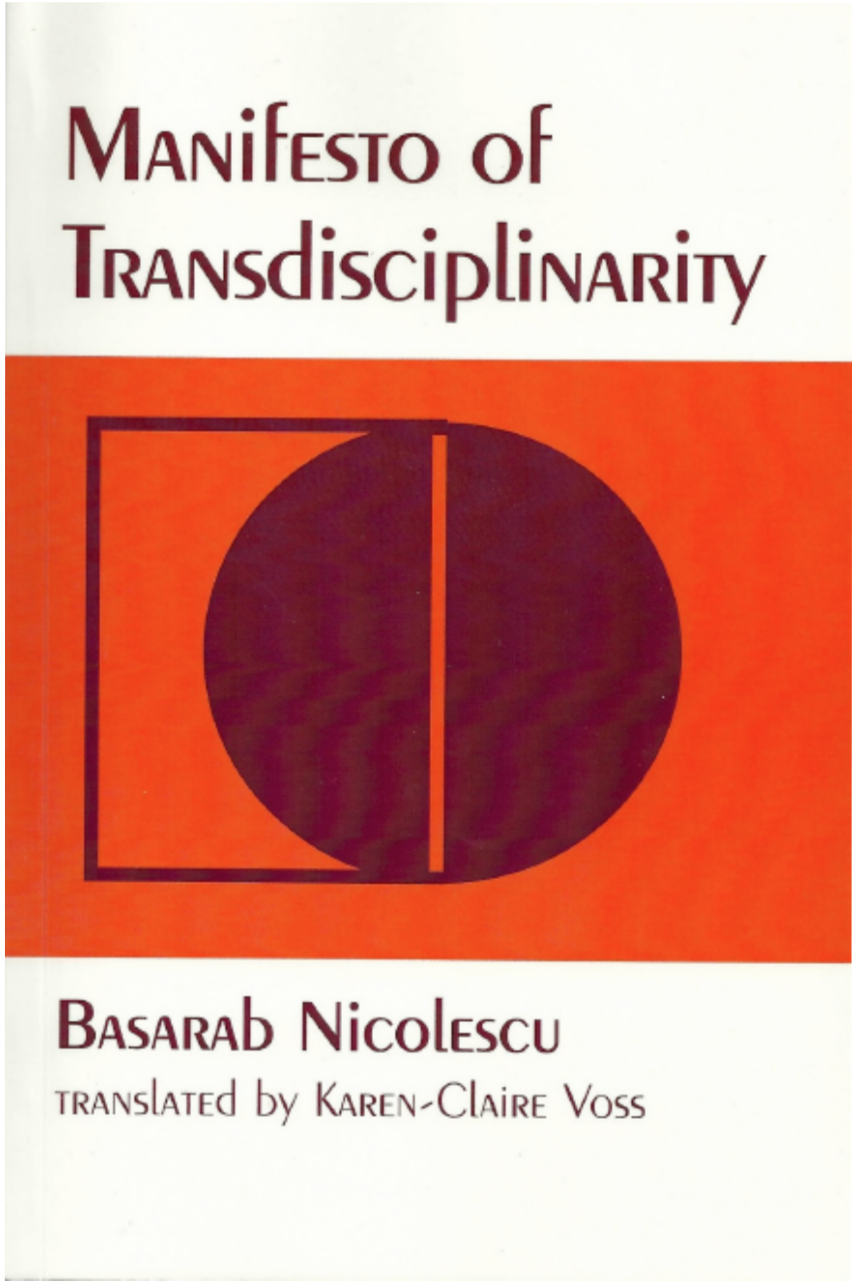
- **Transdisciplinarity** addresses all the indecent issues of designerly inquiry and takes them as the basis for a new kind of science.

>> Relation to „third phase science“ (de Zeeuw)

>> Epistemic democracy (Dewey)

>> Design and Science - approaching each other (Jonas)

>> ...



The strengths / limits of Systems Thinking denote the strengths / limits of Practice-Based Design Research

*„In other words, why not transform this whole business of recalling modernity into a grand question of design?“* Bruno Latour