



Palacký University  
Olomouc

**The 3<sup>rd</sup> Workshop on Archetype Analysis in Sustainability Research**  
**October 30<sup>th</sup> – November 1<sup>st</sup>, 2019**  
**at Palacký University Olomouc, Czech Republic**

## **Common Workshop Report**

**Introduction:** This report presents the key insights of each session of the 3rd Archetypes Workshop. This collection has been compiled as an interactive workshop report.

### **Session 1: Reflecting on the state-of-the-art of ATana (Wed, 14:15h)**

What are important aspects in the current state-of-the-art in archetype analysis?

- Is there really a tension between ATs as classification vs. AT as building-blocks?
- In the Meaning Paper's (Oberlack et al. 2019) definition of AT: What is the precise difference between "the AT" and "the model"?
- There is a variety of methods available to conduct archetype analysis. Different methods are differently suited to deal with causality, normativity, space, and time (see paper by the Methodological portfolio group, Sietz et al. 2019).
- Application of ATana-based recommendations - follow-up on and analysis of real-world examples?

What are important current frontiers in this research field?

- Explanatory ATs and causality in ATana; how to systematically synthesize insights into causal mechanisms from case studies
- Exploring ATs at multiple scales (e.g. nested ATs)
- Embracing high resolution data
- Validating ATs (robustness, sensitivity, legitimacy)
  - Empirical validity: independent data, i.e. data that are not used to identify ATs.
  - Transdisciplinary validity: Considering relevant stakeholder's perceptions, expectations, and demands.

Other notes

- What kind of research fields are particularly important for us? E.g. land-use; climate change; energy transitions. Could these be used as general themes to link our research interests, e.g. for proposal-writing?

Possible topics for breakout groups

- How to link static ATana and scenario ATs; how to make the integration of the three interpretations of ATana (pattern identification, diagnosis, scenario development) even stronger (e.g. through re-interpretation)? Relation of system archetypes and patterns identification/diagnosis/scenario.
- Studying temporal dynamics with ATana; possibly: consider link to systems archetypes.
- How to communicate ATs and ATana?
  - Mainstreaming in different scientific communities
  - How to communicate within a single paper or research proposal?
  - Visualization of archetypes
  - Shall we set-up an AT website?
- Explanatory ATs and causality in ATana; how to systematically synthesize insights into causal mechanisms from case studies; Validation of ATs; role of theory in causality
- Study similarity of interventions / how to transfer knowledge with ATana
- Design conventions, quality criteria: what are “recurrent” patterns (more than 2 cases only)?
- What do the proposed quality standards mean for implementation.
- Going beyond “sustainability research”
- Thinking about “network ATs”?

#### **Reminder: Main open issues listed in the 2nd Workshop report**

- Validity and causality in ATana
- Transfer potential for solutions, upscaling/outscaling
- Scenario Archetypes
- Dynamic archetype analysis
- Scope and limits of AT study protocols

#### **Session 2: Paper/project session (Wed, 16:30h)**

Main insights from this first paper/project session:

- Sustainable rural renewal in China (Rongyu Wang)
  - first-hand AT analysis (primary data), overcoming single-case study designs.
  - identify recurrent combinations of explanatory factors.
  - data analysis: define patterns of outcomes, use formal concept analysis to identify archetypical configurations of explanatory factors
  - challenge: sorting out the configurations of attributes. there are hundreds of configurations. How do we sort out which configuration is an archetypes? How do we consider super- and sub-archetypes
  - which theories to use to explain archetypes
- Archetypal action situations (Christian Kimmich)
  - Looking into situation archetypes, for example, prisoners’ dilemma situations, stag hunt situations.
  - Situations matter! For explaining outcomes; and because strategies that work well in one type of situation (e.g. sanctioning) might backfire in another one.
  - Different situations come together ⇒ networks of action situation.
  - Understanding situational diversity through a deductive game-theoretic approach: 12 symmetric games, 132 asymmetric games.
  - Reducing complexity by creating ties (one game represents four other games).
  - Embracing complexity (e.g. number of actors, numbers of choices, time, incomplete info, simultaneous/sequential moves etc.).

- Basic game archetypes delineate situations, associated
- Global evidence-based out-scaling of water harvesting potential to increase crop production (Luigi Piemontese)
  - WOCAT database: 174 cases of water harvesting
  - Assumption: The same effective measure is replicable in cases of similar social-ecological conditions.
  - Cluster analysis for social-ecological regions.
  - Challenge: archetypes change when you add cases or eliminate cases ⇒ need for robust methods.
  - Water harvesting methods partly overlap in types of social-ecological regions.

### **Session 3: Paper/project session (Thurs, 9:30h)**

Main insights from this second paper/project session:

- Borderlands and land change/crop booms (Victoria Junquera)
  - pathways of land change in borderlands
  - are there multiple mechanisms at play in a single case study area
  - potential combination of qualitative methods (e.g. QCA) and quantitative methods (e.g. clustering)
- Polycentricities (Matteo Roggero)
  - Two-step QCA on urban climate action → a way deal with too many variables in QCA
- Climate impacts on vegetation (Fanny Langerwisch)
  - effects of climate change on the distribution and composition of vegetation.
  - such an ATana of (corrected) model results could be a very good approach to develop the idea of a dynamic archetype analysis

### **Session 4: Paper/project session (Thurs, 11:30h)**

Main insights from this third paper/project session:

- BESTMAP project (Tomas Vaclavik and Fanny Langerwisch): Farming System archetypes for modelling impacts of agricultural policies
  - departing from the global land system archetypes (Vaclavik et al 2013), European land system archetypes and trajectories of land systems change in Europe (Levers et al. 2018).
  - Investigating the adoption of agro-environmental schemes and their impacts on socioeconomic and environmental indicators.
  - Workflow of identifying farming system archetypes.

## Open space and plenary sessions (Thursday afternoon / Friday morning)

Main insights from the open space and plenary sessions:

### Transferability breakout group (Luigi, Diana, Matteo, Klaus, Tomas, Fanny)

- We can distinguish different kinds of “transfer claims” / “replicability claims”
  - Out-scaling / up-scaling / down-scaling
- Alternative labels for “transfer”?
  - Adoption, learning, out-scaling, dating-platform, replicability, representativeness
- The hypothesis of ATs allow for solutions transfer should be tested. How may testable hypotheses look like?
  - How much/what data do we need to falsify a transferability claim?
- We need to consider (i) problems, (ii) solutions, (iii) objectives to define transferability .
- What means when one claims “the problems are sufficiently similar” and “these two solutions are similar” and “the objectives are sufficiently similar”?
  - This partially goes back to the appropriate level of abstraction (of attributes); (and scale). Depending on the abstraction transferability claims can be tested more easily or not.
  - Minimal criteria for chosen the abstraction level? E.g. principal transferability of attributes? Are there features that can always be transferred?
- How could we design a “feasibility study”, using Luigis data?
  - Selecting a specific intervention / geographical area, and test for out-scaling (split sample and do something like cross-validation; testing different abstraction levels)
  - Use existing SOM/clusters, and compare against projects in these areas; compare them qualitatively by replicability
  - Testing replicability claim for smaller N (e.g. with QCA instead of statistics)
  - Collaborate with developing agencies that collect data about practices

### Matteo's notes:

- Old texts: “We need to be able to transfer solutions even if case are not completely the same”. Intuitive, but never really questioned.
- “Transferability analysis” - but still based on similarities: no formal proof that solution could be transferred to cases with similar conditions
- Lots of cultural conditions that cannot be mapped spatially
- Similarity as an assumption rather than something to test
- Synthesis and aggregation of knowledge – whatever transfer should be adjusted to local conditions
- Three conditions important for transferability
  - similarities in the problem
  - similarity in the targets or objectives
  - similarity in the solution space
- Testable hypotheses: Farming systems in Africa, expectations about problems, capacities, etc. When there similar conservation measures apply, cluster should match
- Abstraction question: if you categorize the solutions in a coarse way, it's less meaningful, but easier to validate.
- Physical measures at the end of the list. At the top of the list: mechanisms, principles. Transfer the principle rather than the measure. But principles are also arbitrary / you can frame principles at different levels of abstraction.
- Some people avoid using the word “transfer” because it sounds colonialist

- Alternative: replicability – replication is not copying
- “Representativeness analysis”: looking for other situations of which the one at stake is representative
- Replicability implies doing something – for representativeness, transfer of solutions is not directly implied
  - Development agencies? They should know a lot on replicability. They collect case studies because it’s their way of replicating things. The role of case studies in relation to ATana could be off-loaded to archetype validation (archetypes construction could be based on datasets/numbers alone)
- Wrap-up:
  - Replicability really depends of the level of abstraction
  - Preconditions: similar problems, similar objectives, similar solution space
  - Case studies help you understand what is actually happening on the ground

**Scenario-Diagnosis-Explanatory Patterns breakout group (Simona, Christoph, Diana, Klaus, Fanny, Tomas, Luigi (and Zuzana in thoughts))**

- Example: SSP scenarios in climate change research
  - Concepts: Narratives, scenarios, projections, model runs
  - Further concepts from SSP world: archetypes (classify scenarios), world views are “building-blocks” in the sense that they can be combined to characterize scenario types
- Different modes of ATana: explanation, diagnosis and construction. Construction matters for scenario development.
- Can the scenario archetypes be usefully linked to the inductive pattern identification and diagnosis?
  - Functions of archetypes: Using ATs to explaining, diagnosing, and scenario building.
- Can we learn about valid building-blocks that can be combined by thinking about consistency of scenarios?
- Better linking these functions within one research project or research programme may be one of the big levers for research progress in understanding recurrent patterns.
- What research can bridge the different “archetype communities”?
- Using ATana to link global scenarios and local governance questions in a better way?
  - Using local ATs to enrich global scenarios + using global scenarios to consider local change from AT to AT
  - Scenarios as paths over a map of (local) (governance) ATs (“snapshot view”) vs. the paths being archetypal (“path view”)
  - Climate services linking global scenarios and local ATs
  - Scenarios need to fit to local governance problems.
- Use of climate analogues (or better: social-ecological analogues).
  - Preconditions for transferability of insights from analogues: actors who are open to that; institutional and social-ecological framework conditions that enable actors to be open such.
- Next steps:
  - Idea for a project (H2020 on Climate Services, 13.02.2020)?
    - Finding a coordinator: Klaus, Simona
    - Writing an extended abstract
  - Science/Nature Perspective Articles on linking local ATs (land systems, adaptation barriers, institutional analysis) to global scenario exercises (SSP, IPBES) -- to tap our

different backgrounds, to provide new perspective (and to advertise our special issue).

- generate first extended abstract (Simona leads the team of us). Goal: early February (unless H2020 project).
- identify selected co-authors

### Break out group on Causality and Validation

Causality enters ATana in two ways:

- selection of attributes (attributes shall have some explanatory power towards an “outcome”, with some theory behind)
- “research design”
  - in some analyses, the outcome is an attribute
  - in some analyses, the outcome is not part of the archetype (needed for counterfactuals)
  - in some analyses, causality is an explicit part of the research design
  - in some analyses, causality is implicit

What does validation mean when causality is implicit / no counterfactuals / no explicit causal claim?

Distinction between explicit and implicit causality:

- Explicit causality: cause and effect relationship between the variables used in the analysis elaborated and supported by theory
- Implicit causality: cause and effect relationships between variables assumed, but rather loose, direction of effects can be undefined

ATANAs can be distinguished by whether the outcome is part of the archetype or not

- Included: Archetypes include or are composed of outcomes
- Not Included: Archetypes are used to explain outcomes, outcome is part of the research design but not of the archetype

Structural representation:

Box: Independent variables -> Box: Intermediate variables (explaining the cause-and-effect relationships) -> Box: Outcomes

- Research designs may include outcomes in any combination with independent and intermediate variables

Based on implicit/explicit causality and inclusion of outcomes in the archetype types of analyses can be classified in a two-by-two matrix:

|                    | Outcome included in the archetype | Outcome not included in the archetype                        |
|--------------------|-----------------------------------|--|
| Implicit causality |                                   | Diana’s study on climate vulnerability in Peru (Sietz et al. |

|                    |   |  |
|--------------------|---|--|
|                    |   | 2012): outcomes used to validate ATs                                   |
| Explicit causality | Regina's study on system archetypes in the Caucasus (Ecology and Society paper) | Matteo's study on PolycentriCities (see his presentation in session 3) |

In which of the boxes would you locate your archetype study?

*Validation:*

What does validation mean when causality is implicit / no counterfactuals / no explicit causal claim?

Internal and external validity? Guess: only external validity is part of the validation process as understood in the sense of ATANA (Quality standards paper)

### **Fundraising/communication discussion group (Anastasiia, Klaus, Luigi, Regina and Zuzana)**

Communication:

1. Make the archetype concept clear and maybe refer all to a shared concise definition of AT
2. Maybe have a graphic-designer to create a logo/icon and a graph that summarizes the AT concept (**Luigi** to lead that). We can start from the "meaning" paper, but that will require a participative process.
3. Having a twitter account managed by all of us to reach out to a broader research audience (**Zuzana** volunteered to create the account and then we can all use it)
4. Create a website (in house low budget or more ambitious depending on the funds) (can be hosted at HU; requires someone who selects/structures the content).
5. What are we? Workshop series? Network? Community? (we would say a community)
6. To promote the Special Issue (when editorial is out): Mailings from the community; advertisement poster;

Funding ideas; main Objective: funding travel, workshops, networking

- Volkswagen Foundation Summer School (**Sergio & Klaus**) - Workshop in Germany (max 3 times)
- EU COST (Deadline 20.4.20); <https://www.cost.eu/> - 4 years for networking purposes, 130k€ p.a., Read it further in detail - who takes the lead?
- Bolin Climate Centre (money for workshop – travel/hotel– **Luigi** to lead that with his supervisor, who's part of the Bolin Centre leadership and he won the grant previously)
- Try to include more people from other parts of the world to make our community more international (especially developing countries)
- Involve other non-research actors (NGOs, practitioners) to some other workshop to have feedback on the validity/usefulness/use of the AT concept for their purposes (?). Having a transdisciplinary situation. (for example, at the IASC workshop in Arizona)
- VISION FOR THE NEXT WORKSHOPS:
  - 1) WORKSHOP #4: Reflect on who we are and where we want to go as a community in the next years
  - 2) WORKSHOP #5: Invite stakeholders and engage with them to make it a transdisciplinary approach

## Special Issues Breakout Groups

- Special Issue on Conflict and Natural Resource Management
  - See call distributed by Matteo end of October
  - Three sections: (1) conceptual aspects of natural resource conflicts, (2) space, (3) methodological aspects: comparative analysis, archetypes, beyond case studies.
  - Next steps: circulate the Call in our networks.
- Networks of Action Situations Special Issue
  - focus on networks of action situations (NAS)
  - AT analysis may contribute insights into NAS
  - Networks of action situations (adjacent AS)
- Are there archetypes of sustainable land governance/use
  - Thematic focus
    - Focal point: land. Sustainable land use/ management/ governance
    - Sustainability transformations in farming systems
    - Biodiversity, link to SDGs
    - Link to policy and decision-making: Thinking about replicability. Solution focus.
    - Looking into solution archetypes; or finding solutions for problem archetypes.
  - Aims
    - archetypes as ontological entities (beyond AT as a methodological approach)
      - i.e. not all studies have to do an archetype analysis.
  - Overarching question: Are there archetypes of sustainable land use?
  - Three sections (working titles)
    - Farming system archetypes
    - Land governance archetypes: Governance in telecoupled land systems
    - Biodiversity - food production archetypes (SDG interactions)
  - Archetypes
    - Archetype analysis
    - Studying archetypes (found earlier)
  - Targeted community
    - land
  - Journal candidates
    - Environmental Research Letters (little influence on review process)
    - Global Environmental Change (too expensive open access)
    - Ecology and Society
    - Regional Environmental Change
    - One Earth (too expensive open access)
  - Criteria for journal selection
    - thematic focus / fit
    - read by our target readers
    - social-ecological Special Issue
    - opportunity for guest editors to ensure quality and coherence of the Special Issue
    - good open access option
  - Next steps
    - Extended abstract (consolidated version by February 2020)
    - Check for the journals and make decision about which journal to approach first
    - Gather contributions



- Apply at journal
- Open call for papers
- Workshop to discuss paper drafts
- Submission early 2021

### **Breakout Group on Linking Building Blocks and Case Typologies (Simona, Anastasia, Christoph, Regina)**

Aim: generating ideas for a potential project in which building block and case typology archetype approaches are used simultaneously in order to explore potential synergies –

Central Asia could be a good study region since it offers many opportunities for comparative research

- Link ideas with the silk road initiative of China – trade, megaprojects and mobility could be central topics
  - ○ Countries have similar starting points in post-socialist period
  - Different pathways of mobility (livestock, but also migration)
  - Impacts on natural resource use
  - Choose case studies along the belt and road initiative or along mobility connections
- - Include various levels: national and policy down to local (livelihoods)
  - Policy instrument-> SES development pathway (pathway of mobility)-> outcome (Livelihood sustainability, environmental quality)
  - E.g. What is the impact of megaproject on mobility
- Ideas on archetypes
  - Validation of buildings blocks AT through case studies
  - Building blocks: mobility aspects (e.g. farm composition)
  - Bring in all three: system dynamics, pattern AT, scenario AT ;-)
- Conceptual idea (figure):
  - Identify development pathways (scenarios)
  - Evaluate potential impacts
  - Identify area of sustainable development (doughnut economics) and preferred development
  - Starting point: SES at different levels

#### *Workpackages:*

WP 1: Policy analysis/instruments

WP 2: Scenarios: identify potential pathways and building robust pathways that fit the doughnut: safe and just operating space

WP 3: AT pathways of change – inductive or theory-led, use system dynamics thinking

#### Typologies

- Starting points,
- Interventions
- Future outcomes

#### Next steps:

- Identify funding schemes
- Identify countries and partners (several countries along a belt, case studies with similar features)
- Concept note

- Make small steps, e.g. seed money

## Towards a second phase of archetype analysis in sustainability research

### Action list:

| Activity  | Coordinators   | Timeline                                  |
|---|--|---|
| <b>Archetypes Phase 1</b>   |  |   |
| Finalizing the first Special Issue in E&S, Communication, Editorial   | Christoph, Diana, Klaus  | 2019 and early 2020                       |
| <b>Olomouc Workshop: Reflecting on the state-of-the-art and designing phase 2</b>   |  |   |
| Finalizing the Workshop Report  | Tomas, Diana, Klaus, Christoph   | Nov 2019                                  |
| Communicating a workshop summary and plans for the second phase through the archetypes mailing list   | Tomas, Christoph   | Nov/early Dec 2019                        |
| <b>Archetypes Phase 2</b>   |  |   |
| Special Issue on Conflict and Natural Resource Management (Sustainability journal)  | Matteo, with Dimitrios Zikos and Ourania Papisozomenou                     | 2020 (submission deadline end August)     |
| Perspectives article on linking scenario archetypes with inductive and diagnostic (functions of) archetypes   | Simona, with Klaus, Luigi, Diana, Christoph, ideally Zuzana                | Feb 2020 (consolidated extended abstract) |
| Interaction with scenario and pathway reviews within current IPBES values assessment; potentially also already available data from the ECA assessment | Zuzana, Klaus, Christoph, possibly Ulan, possibly Fanny                    | towards 2021                              |
| H2020 project on Climate Services (first step:clarify B..) to link global with local scenarios and to represent archetype dynamics                    | Simona with Christoph, Diana, Klaus, Tomas, Luigi (and Zuzana in thoughts) | 2019/2020 (Call deadline 13.02.2020)      |
| Project on archetypes of sustainability in the face of trade, mobility and mega-infrastructure projects in Caucasus/Central Asia (working title)      | Regina, with Simona, Anastasia, Christoph                                  | 2020                                      |
| IASC Working Groups on Methods in Arizona, March 2020<br><a href="https://north-america.iasc-com">https://north-america.iasc-com</a>                  | Anastasiia, Klaus, Matteo, David, Regina, Sergio, Graham                   | March 2020                                |

|  |  |   |
|--|--|---|
| <a href="https://mons.org/workshop-2020/">mons.org/workshop-2020/</a>  |  |   |
| 4th Archetype Workshop<br><ul style="list-style-type: none"> <li>- check possible funding from Bolin Center</li> <li>- clarify availability of local hosts</li> </ul>                        | Luigi, with Simona (?) in Stockholm, most likely January/February 2021, feedback with organizers of the 3rd Workshop |   |
| Winter School  | Klaus & Sergio; several contributors   | 2020 (not before Summer)  |
| Special Issue on Networks of Action Situations (with some aspects of archetypal AS)  | Christian et al.   | start in early 2020   |
| Special Issue "Are there archetypes of sustainable land use/governance"  | Christoph, Diana, Tomas  | start Nov 2019, drafts papers at 4th workshop, submission ca. early/spring 2021 |
| Paper on validating replicability claims for solutions (case: development projects)  | Luigi (lead), Diana, Matteo, Klaus, Tomas, Fanny   |   |
| Archetypes Twitter   | Zuzana   | created   |
| EU COST proposal<br><ul style="list-style-type: none"> <li>- explore what it would take to apply</li> <li>- clarify our capacity to pursue this task</li> </ul>                              | Christoph, Diana, Klaus (sorting out until December) more will collaborate then                                      | Deadline 20.4.2020  |
| Long-term progression ideas<br><ul style="list-style-type: none"> <li>- transdisciplinary knowledge co-production on archetypes (COST action)?</li> <li>- software (COST action)?</li> </ul> |  |   |