



Impact of Science

22-24 June, Leiden

Parallel Session (B.020)

Impact on SDG's
& Border– Crossing Challenges



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Institutionalizing inter- and trans-disciplinarity to address global societal challenges

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24 June 2022, AESIS Conference, Leiden

Impact on SDG's & Border– Crossing Challenges

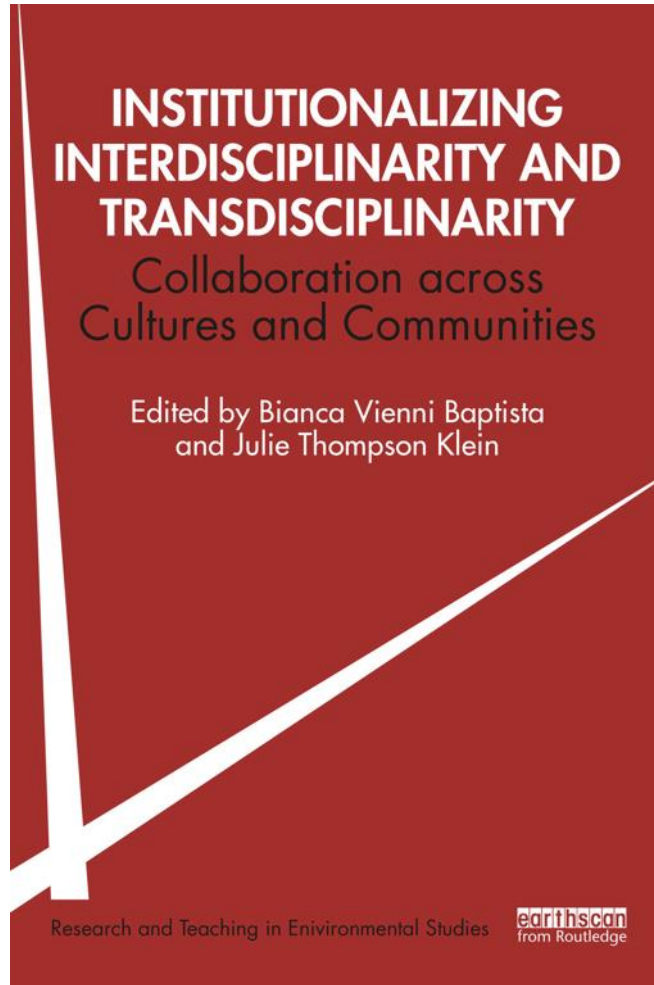
→ What are strategies, policies and practices that may be supported or put in place to more effectively address global challenges and work towards the SDG's?

- ID/TD cross-boundaries of expertise
- strategies → policies → practices
- **institutionalizing interdisciplinarity (ID) and transdisciplinarity (TD) as means to address global societal challenges**

Table of contents

1. Institutionalizing ID/TD vs. fixed formulas
2. Comparative studies of institutionalizing processes
3. Framework for institutionalizing ID/TD
4. Factors and dimensions for institutionalizing
5. Final remark

Institutionalizing interdisciplinarity and transdisciplinarity: collaboration across cultures and communities



Bianca Vienni-Baptista and Julie Thompson Klein
(Routledge, 2022)

- To understand the challenges of ID/TD and their institutionalization,
- To foster inter- and transdisciplinary campus cultures – as means to overcome societal challenges.

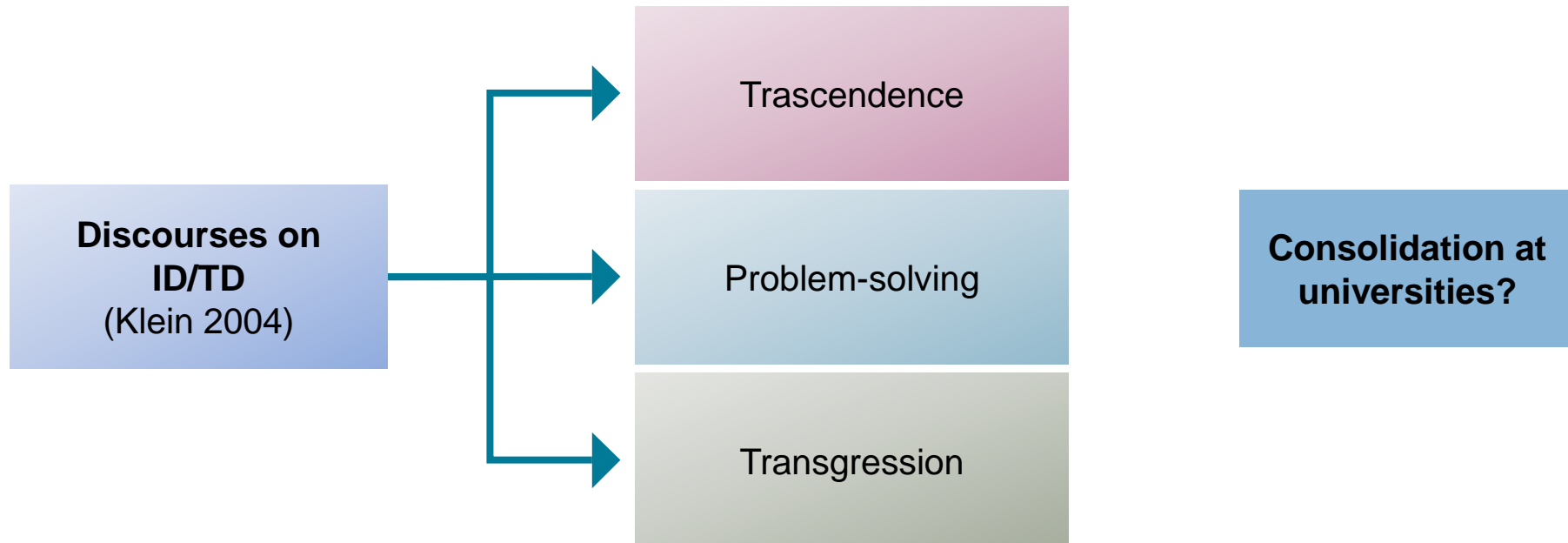
Interdisciplinarity and transdisciplinarity

Table 2.1 Defining characteristics in typologies of interdisciplinarity

Multidisciplinarity	Interdisciplinarity	Transdisciplinarity
<ul style="list-style-type: none"> • juxtaposing • sequencing • coordinating 	<ul style="list-style-type: none"> • integrating • interacting • linking • focusing • blending 	<ul style="list-style-type: none"> • transcending • transgressing • transforming
<ul style="list-style-type: none"> • complementing 		<ul style="list-style-type: none"> • hybridizing
<ul style="list-style-type: none"> • Encyclopedic ID • Indiscriminate ID • Pseudo ID 		<ul style="list-style-type: none"> • Systematic Integration • Transsector Interaction

Source: Klein, J. T. (2010). A taxonomy of interdisciplinarity. In R. Frodeman, J. T. Klein & C. Mitcham (Eds.), *The Oxford Handbook on Interdisciplinarity* (pp. 15-30): Oxford University Press Oxford.

ID/TD in context



Institutionalizing as a verb

→ **Cultural configurations and communities**

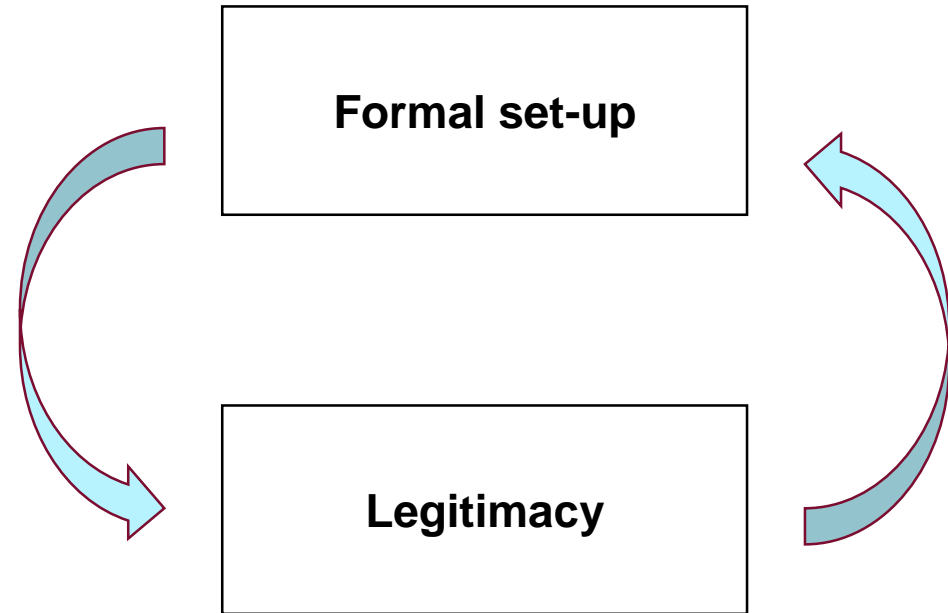
→ **Timeframes and spaces**

Institutionalizing:

- embedding is a process, not a pre-determined formula,
- institutionalizing **as a verb** rather than the static connotation of a noun associated with buildings, organizational charts, and fixed objectifications of ideas and goals.
- institutions as mobilizing networks (Davidson & Goldberg, 2009) → dynamic processes of change.
- temporal and spatial dynamics of institutionalizing,
- accounting for history and context.

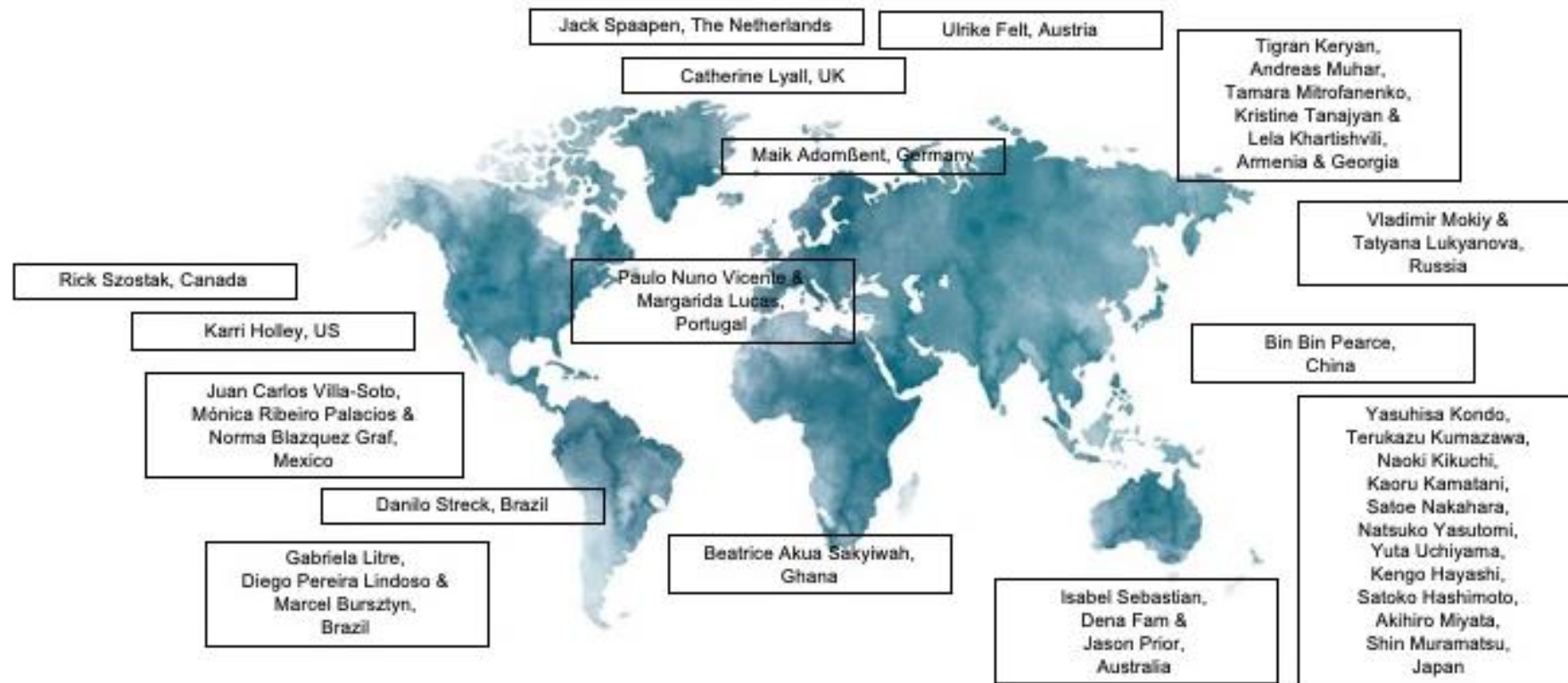
Institutionalizing: iterative process

- Two levels:
 - institutionalizing as a policy
 - institutionalizing as a practice
- feedback between the two levels
- Not exhausted in a single stage



(Vienni-Baptista & Rojas Castro, 2019)

A comparative perspective on institutionalizing ID/TD



Part I: Interdisciplinary institutional spaces and timeframes

- Excellence with Impact in UK (Catherine Lyall)
- Teaching and learning in the Complementary Studies, Germany (Maik Adomßent)
- Interdisciplinary projects and science policies in Mexico (Juan Carlos Villa-Soto, Mónica Ribeiro Palacios & Norma Blazquez Graf)
- Lessons from environmental and sustainability science programs in Brazil (Gabriela Litre, Diego Pereira Lindoso & Marcel Bursztyn)
- Interdisciplinary education and research in North America (Karri Holley & Rick Szostak)

Part II: Transdisciplinary institutional spaces and timeframes

- The rise of transdisciplinary 'boundary organisations' within the Australian Tertiary Education sector (Isabel Sebastian, Dena Fam & Jason Prior)
- Transdisciplinarity in Ghanaian Higher Education (Beatrice Akua-Sakyiwah)
- Development of interdisciplinarity and transdisciplinarity in modern Russia (Vladimir Mokiy & Tatyana Lukyanova)
- Historical context and future potential for inter- and trans-disciplinarity in China (BinBin J. Pearce)
- Implementing Transdisciplinary case study approaches in Post-Soviet academic systems (Tigran Keryan, Andreas Muhar, Tamara Mitrofanenko, Kristine Tanajyan & Lela Khartishvili)
- Research Institute for Humanity and Nature: A Japanese center (Yasuhisa Kondo, Terukazu Kumazawa, Naoki Kikuchi, Kaoru Kamatani, Satoe Nakahara, et al.)

Part III: Intersections between cultures and communities

- Epistemic cultures in European intersections of Art–Science (Paulo Nuno Vicente & Margarida Lucas)
- Making and taking time (Ulrike Felt)
- Co-productive evaluation of inter- and transdisciplinary research and innovation (Jack Spaapen)

Methods

- Systematic literature review (cases in other geographical contexts, specialized academic and policy literature)
- Qualitative approach: ethnography, participant observation, interviews, document analysis.
- **Comparative study** (Morlino, 2018) → to comprehend similarities and differences across contexts:
 - a) Provides an adequate morphology for global description and classification of various forms of institutionalization.
 - b) Determines relationships and interactions between different factors within and among institutions.
 - c) Identifies underlying conditions and conceptual developments for institutionalizing.

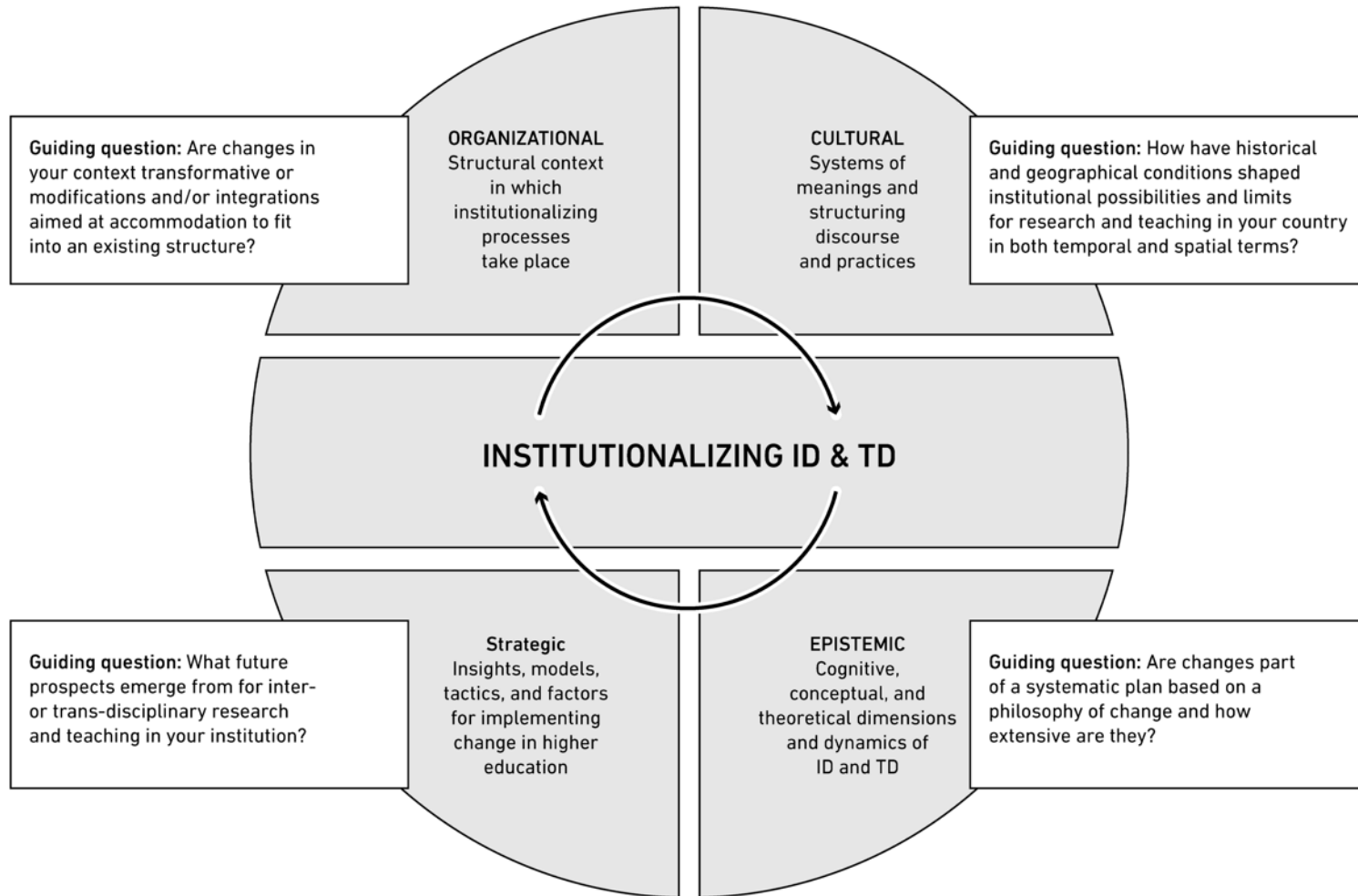
Guiding questions

1. Historical and geographical contexts: *How have historical and geographical contexts conditions shaped institutional possibilities and limits in your country?*
2. Inter- and trans-disciplinary research and teaching organization in time and space, including communities to accomplish national and regional goals: *How are inter- and trans-disciplinary research and teaching organized temporally and spatially in your context?*
3. Transformations or modifications and/or integrations fitting into an existing structure: *Are changes in your context transformative or modifications and/or integrations aimed at accommodation to fit into an existing structure?*
4. Theories of institutional change: *Are changes part of a systematic plan based on a philosophy of change and how extensive are they?*
5. Factors that help or hinder institutionalizing processes: *Given the prior subthemes, what future prospects emerge from for inter- or trans-disciplinary research and teaching in your country?*

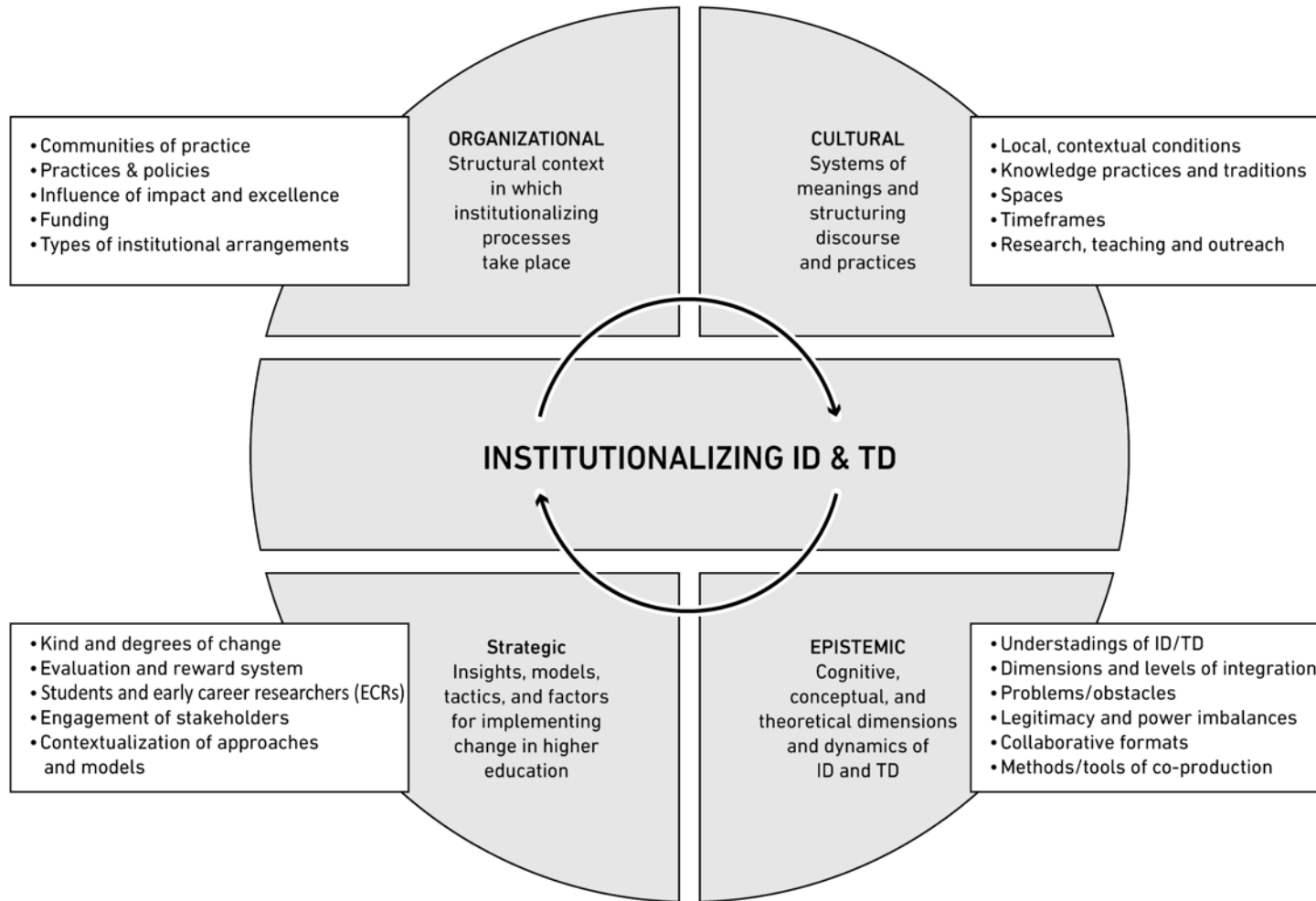
Four dimensions are entry points to the framework

1. **Epistemic:** cognitive and conceptual aspects of ID/TD.
2. **Cultural:** linkages and intersections between ID and TD as broad systems of meanings that structure and are structured by discourse and practices.
3. **Organizational:** the structural context in which institutionalizing processes take place together with communities of practice.
4. **Future potentials and strategies:** insights and successful aspects that can be implemented to promote interdisciplinarity and transdisciplinarity in future scenarios.

Framework for institutionalizing inter- and transdisciplinary research and teaching in Higher Education



Factors for institutionalizing inter- and trans-disciplinary research and teaching.



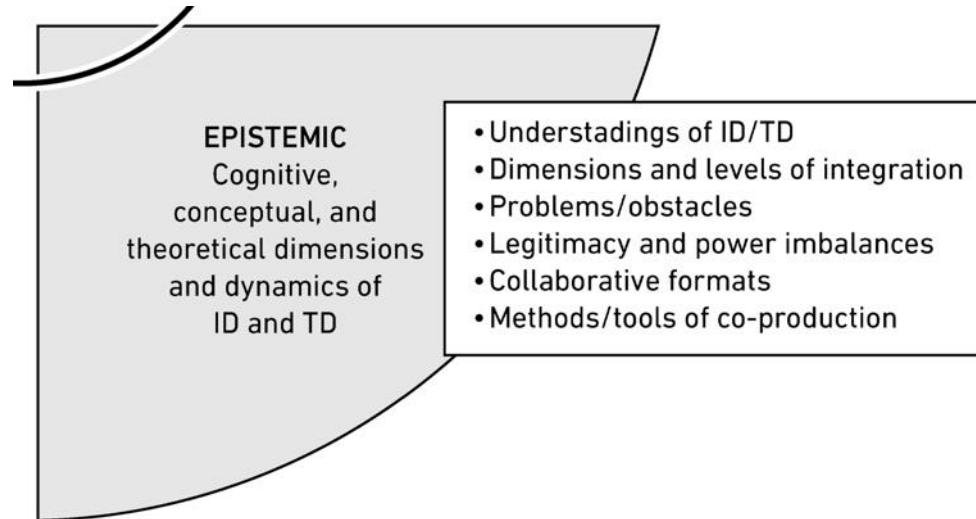
Epistemic

- At the European level, still pervasive differences between the „two cultures“ → disciplinary legitimacy and power imbalances (Nuno Vicente & Lucas, ch. 13).
- Difficulties to institutionalize ID derived from different understandings of the term (Kondo et al., ch. 12).

“(TD) cannot be replicated from the global North, where material realities are different from the reality of Africa’s environment and sustainability. TD is a Westernized ideology, but its emergent features and integrative approach to co-producing knowledge can be adopted to suit our environmental needs”

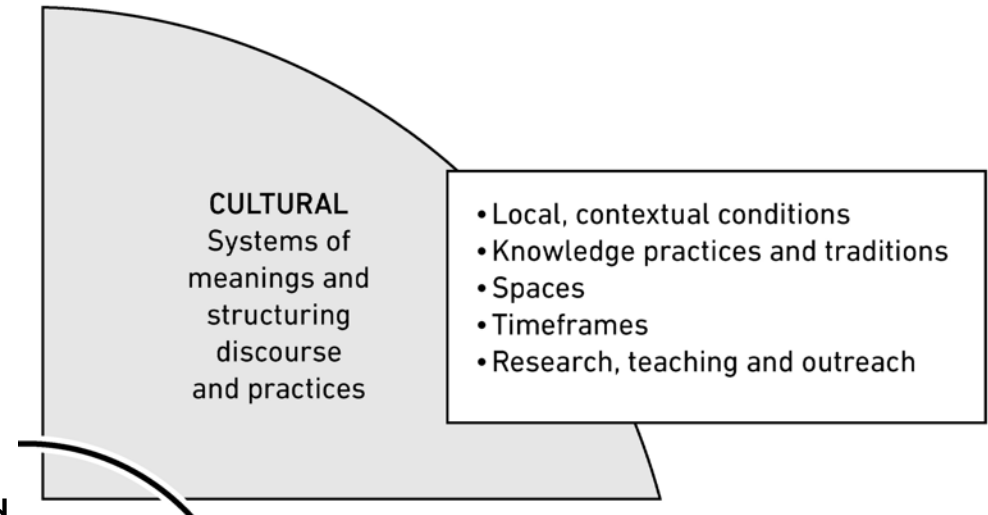
(Akua-Sakyiwah, ch. 8)

- Networks → policy-makers and funders



Cultural

- Successful examples of how knowledge from local communities and industrial representatives was integrated into teaching projects (Sebastian et al., ch. 7).
- In Latin American countries, institutionalizing efforts emerged from re-democratization processes after dictatorship periods (Litre et al., ch. 5). → new ways to value ID/TD.



“The temporal regimes governing contemporary academia could thus be compared with an invisible infrastructure that frames ways in which researchers can know and define the kinds of academic lives that they can live. This infrastructure also fosters or hinders creating and sustaining feelings of community and belonging”

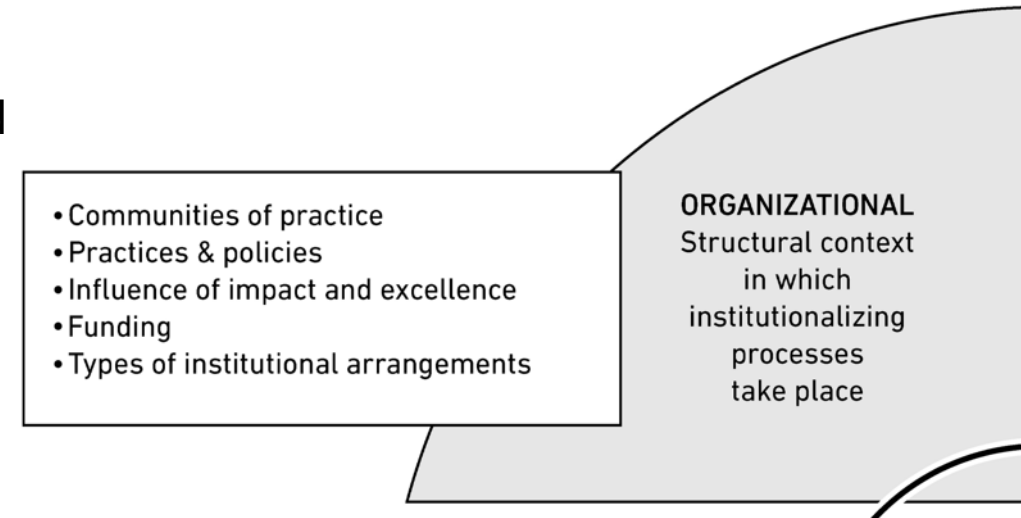
(Felt, ch. 14)

Organizational

- ERASMUS European Universities Initiative (Spaapen, ch. 15).
- Some funding schemes ask for ID/TD though most are based on understandings that do not take into consideration local contexts (Keryan et al., ch. 11).
- Boundary-crossing strategies to enable distributed accountability mechanisms for industry and academia (Sebastian et al, ch. 7).
- Communities of practice for and of ECRs.

“(...) change will start with universities rethinking their education and training modalities, research and funding policies, and institutional flexibility to accommodate inter- and trans-disciplinary endeavors”

(Spaapen, ch. 15)

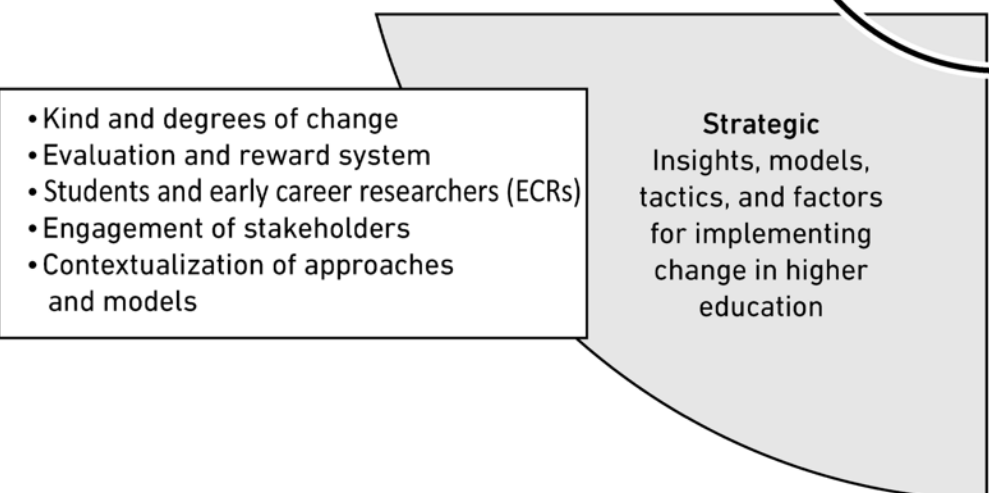


Strategic

“What is at stake at the present time is not just the standing of universities within society and the faith of the general public in academic expertise, it is universities’ ability to rise to the challenge of helping to forge a new and newly integrated vision of society in the post-pandemic world”

(Thain, 2021: 1)

- Local and regional approaches do not escape general dynamics of science, policy, and society and depend on timeframes imposed by the logic of productivity measures for collaboration (Felt, ch. 15).
- Balance of dimensions in this framework can counter dynamics that impose challenges to knowledge production at institutions fostered by both bottom-up practices and top-down policies (Vienni-Baptista et al., ch. 16).

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- Kind and degrees of change
 - Evaluation and reward system
 - Students and early career researchers (ECRs)
 - Engagement of stakeholders
 - Contextualization of approaches and models

Strategic
Insights, models,
tactics, and factors
for implementing
change in higher
education

Conundrum: double identity

Inter- and transdisciplinary institutions are increasingly legitimized as part of academic culture at universities but ...

also continue to struggle to implement environments for working across boundaries, thus requiring “extra” criteria to be seen as “real” institutions.

(Vienni-Baptista & Rojas Castro, 2019)

Thank you very much!

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Recommendation

Impact on SDG's & Border-Crossing Challenges

*“To involve all the stakeholders along the research process,
plus action programme and start from the beginning”*